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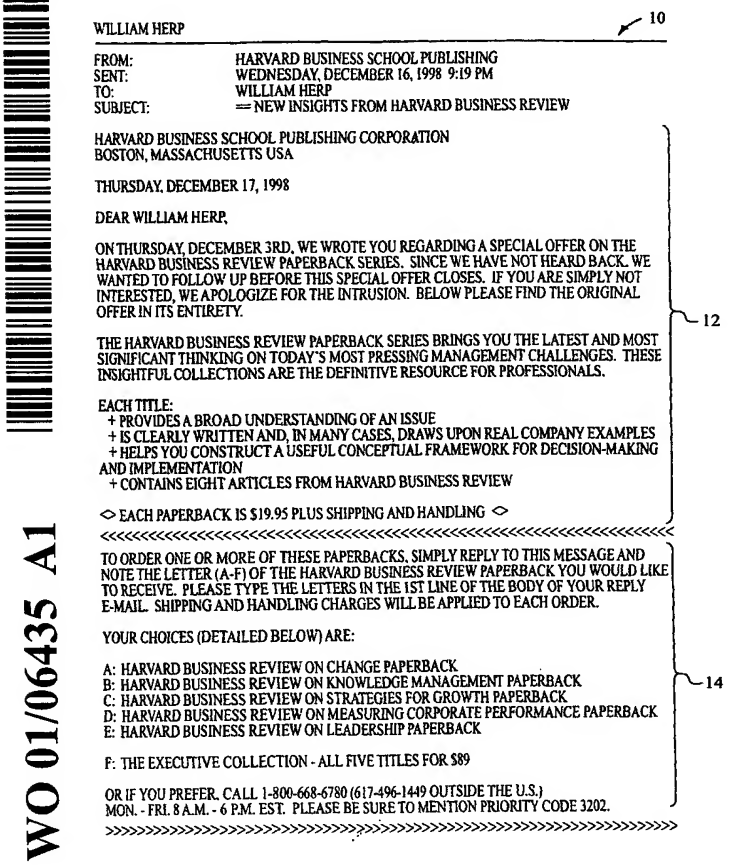
*[Continued on next page]*

(54) Title: DIRECT RESPONSE E-MAIL



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(57) Abstract: An e-mail message [10] is analyzed to derive response information concerning a commercial transaction. Based on the derived information, commercial transaction data are automatically generated in a format that is usable to complete the transaction.

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# DIRECT RESPONSE E-MAIL

## Field of invention

This invention relates to direct response e-mail.

## Background of the Invention

In direct response e-mail, a vendor, for example, can sell a product to a customer by sending an e-mail message to the customer that describes the product and its price. The customer can order the product by returning an e-mail (sometimes called a direct response e-mail) that gives appropriate order information. The vendor can confirm the order by a return e-mail. The order information returned by the customer can sometimes be determined automatically using software that analyses the customer's reply e-mail.

## Summary of the Invention

In general, in one aspect of the invention, an e-mail message is analyzed to derive response information concerning a commercial transaction. Based on the derived information, commercial transaction data are automatically generated in a format that is usable to automatically complete the commercial transaction.

In general, in another aspect of the invention, an e-mail message is sent to a customer offering a product or service for sale. The e-mail message includes locations for response by the customer to indicate his intention to order the product or service. The customer returns an e-mail message that includes the response. Based on the received e-mail, order information is automatically generated in a format usable automatically by an order fulfillment system to cause the order to be filled.

In general, another aspect of the invention includes automatically identifying response information which

requires resolution of an issue with the source of the e-mail message and automatically managing an e-mail dialog with the source to resolve the issue.

In general, in another aspect, the invention features automatically sorting e-mail messages, based on response information contained in the messages, into e-mail messages that can be processed automatically to generate commercial transactions, e-mail messages in which the response information is inadequate to permit generation of commercial transactions, and e-mail messages that may be subjected to exception handling to yield information that is sufficient to generate commercial transactions.

In general, in another aspect, the invention features automatically generating a confirmatory e-mail message to the source of the e-mail message confirming that a commercial transaction has been or will be completed.

In general, in another aspect, the invention features receiving inbound e-mail messages that result from corresponding outbound e-mail messages associated with a marketing program, the inbound messages containing response information, each of the outbound messages being associated with a distinct piece of the marketing program. The response information in each of the inbound messages is automatically associated with the corresponding distinct piece of the marketing program.

In general, in another aspect, the invention features automatically merging response information with corresponding information in a database for use in completing transactions.

In general, in another aspect, the invention features identifying inbound e-mail messages that cannot be processed automatically to generate commercial transactions,

and using the database information to assist in exception handling of the identified inbound messages.

Other advantages and features will become apparent from the following description and from the claims.

## Brief Description of the Drawing

Figures 1A through 1C and 2A through 2B show e-mail messages.

Figure 3 is a block diagram of a direct response e-mail system.

## Description of the Preferred Embodiments

### Outbound e-mail messages

The two e-mail messages shown in figures 1A through 1C and 2A through 2B are examples of outbound messages associated with commercial transactions.

The example message 10 shown in figure 1 offers Harvard Business Review products. Message 10 includes basic copy 12 that is similar to basic direct marketing copy of the kind that is commonly used in e-mail marketing. Message 10 also contains a section 14 giving instructions on how to order the products.

### Inbound e-mail messages

To take advantage of the offer shown in figure 1, the recipient creates a reply e-mail message (the direct response message) and types the letters of the items that he wants to order in the first line of the body of the message. In other examples, the letters could be typed in the subject line or the last line of the body of the message. The user is also asked to correct and complete shipping and e-mail address information that has been merged into the outbound e-mail message in a section 16. In section 16, each of the entries is bounded by brackets. Another section could

contain merged billing information, not shown. The person who replies to the e-mail (the customer) is meant to include the corrections or additions within the indicated brackets.

By allowing the recipient to take advantage of the offer simply by replying to the e-mail, rather than requiring the recipient to place an order by linking to a related web-site or to print the e-mail message and FAX it back, or to call an 800 number, a much higher return rate can be achieved. For conventional outbound e-mail messages that require the recipient to click on an embedded URL to go to a web site, the returns may be on the order of several hundred percent on investment (the fee charged for delivering the outbound messages). By enabling the recipient to provide direct response e-mail messages as in figure 1, the return on investment can be as high as several thousand percent.

Figures 2A and 2B illustrate a similar outbound e-mail message in which there is no choice of products but only a single offer to be accepted or rejected. To take advantage of the offer, the recipient types "yes" in the subject line. In figure 2B, a shipping block 18 of the kind mentioned above is shown. (In this case, the shipping block contains no information because the shipping address is the same as the billing address.)

One reason for including differential billing and shipping blocks is to acquire information in the return e-mail message that is similar to information captured in orders placed on a related web site. In a system in which web-site orders generate fields that can be fed directly to an automated order fulfillment process, it is useful to make the e-mail message information field-wise consistent to permit the information to be delivered automatically to the same order fulfillment process.

Exception processing

Processing the inbound e-mails (the ones with responses concerning commercial transactions from the recipients of the outbound e-mails) may require custom interaction with the recipients. For example, the wording of the outbound messages may be confusing to the recipients.

As shown in figure 3, the system 40 enables the transactional e-mail message processor 42 to determine when a dialog with the recipient 44 is needed and then assists a human service representative 46 to conduct an effective dialog 48. The dialog can be conducted on behalf of the vendor 50 but without involving the vendor. Alternatively, the vendor's fulfillment process 52 can be notified electronically 54 of interaction that may be required. Easing the processing of responses that include customer orders is important because the orders typically come back quickly, e.g., within 36-48 hours, and in large volume. The ability to deal with questions that arise as a result of the contact from a customer service point of view keeps the vendor's customer service organization from being overwhelmed by the responses that come back.

The ability to process exceptions without involving the customer service organization of the vendor is based partly on knowing how the outbound e-mail messages were constructed. As a simple example, a recipient may ask an unnecessary question that could have been answered by reading the outbound e-mail message. The e-mail message processor can pull out the relevant portion of the message and send it back to the recipient to answer the question.

ProcOrder Process

The inbound e-mail messages 60 are batch processed by a script called ProcOrder 62. ProcOrder parses the elements of the inbound e-mail messages in accordance with the original set up and instructions of the outbound e-mail messages 64. ProcOrder determines if all of the items that are required for an order to be completely processed automatically appear in the inbound e-mail message. For example, the script would look for the ordering token, such as the word "yes" or a series of letters depending on whether it is a single or multiple offer. The script would also look for footer information in the e-mail message, including a code that identifies the given campaign and the given offer, as seen in block 66 of figure 2B. In that example, there are four components in the footer, but only two are represented because the other two are not required in this instance. The first element is a customer identifier 68, e.g. 861270. Then there is a space 70 between two pipes that would contain the list identifier if there were one. There may be multiple recipient lists for a given marketing campaign. In the example, there is only one list, and there is no list identifier. A list number 243 might refer to a list of people who made a purchase at the vendor's web site or who subscribed at the web-site for a listserv.

The third footer item could be a source of awareness code 72, e.g., 3275, which identifies a particular marketing campaign. For example, in the case of figure 2, the code could refer to a Benchmarking Three-part Video Series offer.

The last item in the footer, located between the final pipe and the first right bracket would be a flight identification code 74. A given campaign could have multiple flights of e-mail messages.

After looking for the footer information, the ProcOrder parser looks for fields in the billing and shipping address blocks that are required to complete the order. What is required may vary with the type of campaign but typically the minimum requirements are a name and a physical address. If the information is not completely available in the response e-mail message, the script checks to see if it is available in the database 76. If not available in either place, the script generates an exception entry for an exception list. The exception list is provided to a service representative 46 who can then act on it (without involving the vendor's customer service organization), e.g., by sending back an e-mail message asking for the shipping address.

If all required information is available, the script generates a fully fielded valid order in a format required by the fulfillment system of the vendor and adds it to a batch of valid orders 78 which are sent electronically to the fulfillment process.

Confirmation e-mail message

As a result of running the ProcOrder script, an e-mail message 80 is returned to each customer either to confirm an order or to request more information. In the latter case, a dialog ensues and is managed by software and through an exception handling service as explained earlier. For example, the customer's response could say something like "sure, send"; or "send it and I'll take a look." Shortly thereafter the customer would receive a confirmation "Thank you for your order; you can expect the CD-ROM in about seven business days. Please let us know if there is anything else we can do to help simply by replying to this e-mail."

One-click ordering

Another feature of the e-mail dialog with a customer involves simplifying and optimizing the presentation of content. In the examples of figures 1 and 2, the information is presented in a simple text format. It is useful also to provide in-line HTML code in the outbound e-mail message in a manner similar to the one-click ordering that Amazon.com offers in a web-site context. In one-click ordering, the customer sets up an account by providing credit card and shipping information. On subsequent visits to the web site, the customer can pick a product with one click, place an order, and have it shipped. A similar technique could be adapted to e-mail message interchange by embedding one-click ordering into e-mail.

An advantage of in-line HTML code is the opportunity for a much higher response rate because of the higher graphical contact and higher level of engagement normally achieved by a graphical message.

Template

The outbound e-mail messages are set up in a standard format using templates 90. The templates enable either a single-offer message or a multiple-offer message. Other templates are also possible, including one that embeds in-line HTML into the message as mentioned above, either for the single-offer or multiple-offer cases.

In addition, a set-up tool 92 permits the parameters of a given campaign to be defined, including the source of awareness code, the flight identification code, the campaign identification code, and similar information. The set-up tool also permits defining the tokens that are to be used in a given campaign (for example, the letters assigned to different products being offered). The set-up tool also allows a definition of the required fields that must appear

in a given campaign to enable automated generation of orders to an existing fulfillment system.

The set-up tool also provides a user interface that enables a vendor to help in entering the set-up information.

The result of applying the tool to the templates is a set of outbound message forms 94 that are ready for use.

Reporting tool

After the template is set up and the system is ready to launch a flight, address 108 and other information 110. 112 stored in the target list of customers is merged with the message forms, and the e-mail messages are automatically generated and sent by an outbound e-mail delivery engine 96. Customers then begin to respond. The ProcOrder script generates automatic orders to the fulfillment system and exception information for additional processing.

A reporting tool 104 aggregates information about the responses for a given campaign according to source of awareness code and flight. The information is made available on-line to the vendor and can be used for a variety of marketing purposes. The information could be generated as an Excel file attached to an e-mail, or as a paper-based report, or as an electronic file that is transferred on a batch basis.

Gathering additional information from database

There may be an intermediate step between the parsing engine's (ProcOrder) extraction of information from an e-mail message and the generation of the valid order. The intermediate step could be a querying process 112 to gather additional information from an existing database. The additional information may not have been included in the outbound e-mail messages but may be needed to generate a valid order. For example, product codes 112 may be stored in the database but not included in the outbound e-mail

message. The letters entered by the customer can be mapped to the actual product codes by reference to the tables of the database based upon the source of awareness code.

The resulting valid order is a fully-fielded record that has the fields required by the client's order fulfillment system to process an order.

Exception treatment

Exception handling can be treated in different ways depending on the circumstances. For example, an exception might occur when a customer responds from an e-mail client that does not quote the original text of the outbound e-mail message. The inbound e-mail message then has the customer's e-mail address, a subject line that says "yes", and the original subject line from the campaign, but does not have the required information for the shipping address or the footer information. ProcOrder would kick that out as an exception, but the exception handling system would allow a response management representative 46, based on the e-mail address, to confirm, from the database 76, that all of the required information is available. Use of the subject line allows the system to tie back to the appropriate campaign and to figure out who is ordering and what he is ordering. A valid order can be created without further interaction with the customer other than to send him a confirmation that the system has been able to enter a valid order on his behalf.

The system thus recognizes that it is not likely to be possible to automate every interaction with the customer, but it may be possible to complete a dialog with essentially all of the customers from whom inbound e-mail messages are received by automatically identifying messages that will require custom human handling and providing information and

tools that enable the human handlers to complete the exception transactions in an efficient manner.

Non-order response processing

Not every inbound e-mail message is an order. Non-order messages include undeliverable bounced messages to ad hoc customer service responses. Non-order inbound e-mail messages must be identified by the parsing engine.

Undeliverable e-mail messages 114 are automatically separated from the inbound e-mail stream and stored for offline handling by a human response handling professional, who operates a script on the files of undeliverable messages. The script classifies them as "soft" and "hard," parses e-mail addresses and footer data from the messages, matches the parsed records to the database, and flags appropriate records as "undeliverable".

Other non-order messages also are handled manually as explained earlier.

Vendor creation of e-mail campaigns.

A campaign creation tool 126 is provided to a vendor to enable simple entry of all information needed to create an e-mail campaign, including all the parameters, the text of the messages, and the tables of data needed in the database. The vendor delivers the campaign electronically to the transactional e-mail processor which then delivers the e-mail messages, receive the responses, processes all exceptions, and returns to the fulfillment system the vendor orders in a proper format.

A web-based vendor interface 128 enables on-line viewing by the vendor of the status of all campaigns, including the state of those that are in development and the results of those that are "live". The information is hosted by the transactional e-mail processor in part based on the

database 76. The interface also gives the vendor a mechanism to check text and other content into the database.

Alternatively, instead of automatically permitting the vendor to fully create a finished campaign, the vendor may be enabled to download and check into the database a proposed campaign. Then an account executive of the e-mail handler process would review it and work with the vendor to complete it before it is finally queued for distribution.

Appendices A, B, and C contain more detailed descriptions of aspects of implementations of the invention. Appendix D contains source code written of an example of the ProcOrder process.

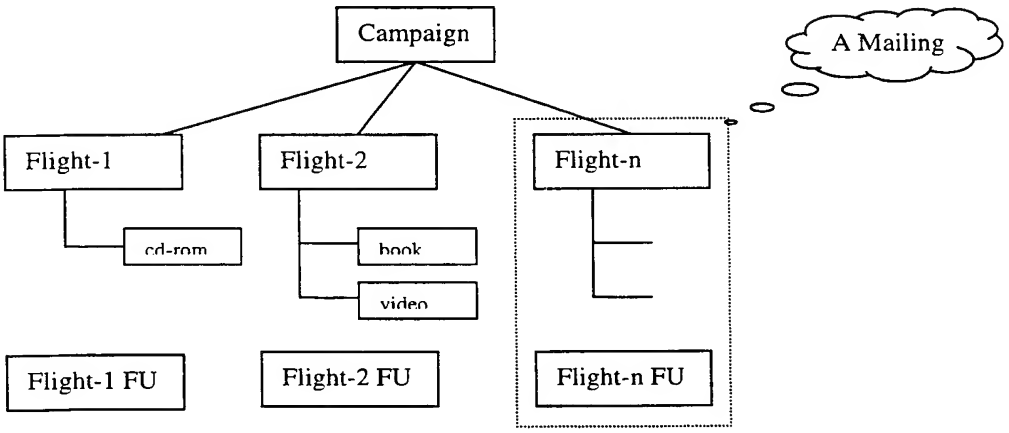
Other implementations are within the scope of the following claims.

What is claimed is:

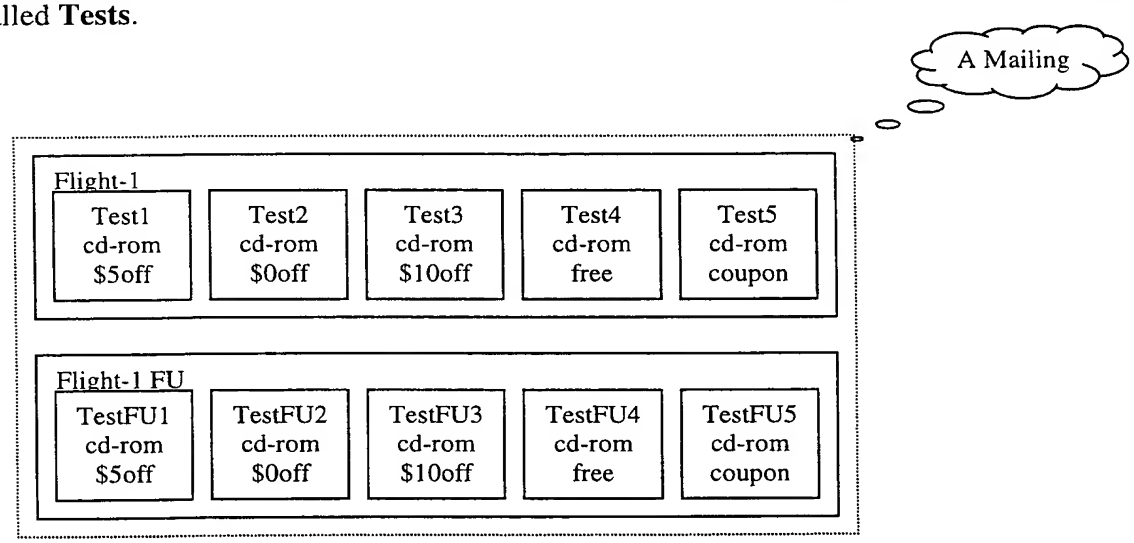
# e-mail Protocols, Structures, Definitions & Cycles

## MAIL CAMPAIGN

A mail campaign is defined in terms of **Flights**.




A flight contains one or more items that are being promoted but is not restricted to the manner in which the promotion is performed. A flight could be setup to promote a CD-ROM but has variances in the promotion of the item to the targeted mailing. These variances in a flight are called **Tests**.




In order to reference the entities above, each are assigned Ids as follows: APPENDIX A

A Campaign
- Has a Campaign ID , **CID**
- Has 1 to n flights and flight follow-ups

A Mailing
- Has a Mailing ID, **MID**
- Has a Client Code (SOAC). The mailing is performed on behalf of the client.
- Has a Flight ID, **FID** and a Flight Follow-up ID, **FID**

A Flight
- Has a flight ID, **FID**
- Shares a **SOAC** with its Flight Follow-up
- Contains one or more Test Ids, **TID**
- Has 1 to m items for sale

An Item
- Has an Item ID **IID**
- Has an Item code (determined by the client)

To summarize, the following ID acronyms are used:
- MID - **M**ember ID (ID of the person receiving the e-mail)
- CID - **C**ampaign ID
- LID - mai**L**ing ID
- FID - **F**light ID
- TID - **T**est ID
- IID - **I**tem ID
- SID - **S**tyle ID (ID of the style of the e-mail message)

## MAIL PROTOCOLS

### SMTP

The *Simple Mail Transfer Protocol* (SMTP) is described in RFC 821 and is the way that two sites on the Internet exchange mail messages.

The commands are:

- HELO *domain*
- MAIL FROM: *username*
- RCPT TO: *username*
- DATA
- QUIT

Each command is terminated with a CR-LF pair. Replies start with a three-digit response code and continue with text designed to be read by users.

### POP3

POP3 is the Post Office Protocol. If the site is always on the Internet, then mail would be sent with an SMTP-sender and received with an SMTP-receiver. However, it may cases it is not possible to maintain a permanent internet connection and in such cases, the Post Office Protocol is used to receive the inbound mail. POP3 allows mail to be stored on machine that is always on the Internet and a receiving host connects to it, asks for any mail and disconnects.

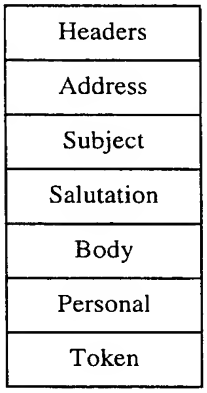
The commands are:

- USER *username*
- PASS *password*
- STAT
- LIST *[message number]*
- RETR *message number*
- DEL *message number*
- LAST
- QUIT

## THE ANATOMY OF AN OUTBOUND E-MAIL MESSAGE

An outbound email message has a predefined structure. The message is created by combining together a text block with an email address.

The structure of an outbound mail message consists of a Property, Address, Subject, Header, Body, Personal and Token.




*Structure of an outbound e-mail message*

### a) Headers

The first few lines of an Outbound Mail message are called the Headers and have a defined format. This information is not normally displayed to the User by a Mail Client application and can only be viewed if the Client permits e.g., in Microsoft Exchange this information can be viewed by listing the properties of a mail message as follows:

```
Received: by mail.kersur.net (mbox peterk)
 (with Cubic Circle's cucipop (v1.31 1998/05/13) Fri Mar 19 20:59:00 1999)
X-From_: aestes@e-dialog.com  Fri Mar 19 13:43:54 1999
Return-Path: <aestes@e-dialog.com>
Received: from montana.e-dialog.com (mail.e-dialog.com [207.31.244.2])
        by mail.kersur.net (8.9.1/8.9.1) with ESMTP id NAA10659
        for <peterk@sytech.com>; Fri, 19 Mar 1999 13:43:53 -0500 (EST)
Received: by MONTANA with Internet Mail Service (5.5.2448.0)
        id <GZZPKKZ2>; Fri, 19 Mar 1999 13:43:57 -0500
Message-ID: <B15DC0490C8AD211BDFD004005A0C2CC47F10B@MONTANA>
From: Anthony  Estes <aestes@e-dialog.com>
To: "'peterk@sytech.com'" <peterk@sytech.com>
Subject: FW: Warning: could not send message for past 4 hours
Date: Fri, 19 Mar 1999 13:43:54 -0500
MIME-Version: 1.0
X-Mailer: Internet Mail Service (5.5.2448.0)
Content-Type: multipart/mixed;
        boundary="----_=_NextPart_000_01BE7238.71C0EB9A"

This message is in MIME format. Since your mail reader does not understand
this format, some or all of this message may not be legible.

------_=_NextPart_000_01BE7238.71C0EB9A
Content-Type: text/plain;
        charset="iso-8859-1"

------_=_NextPart_000_01BE7238.71C0EB9A
Content-Type: application/octet-stream;
        name="ATT00547.TXT"
Content-Disposition: attachment;
        filename="ATT00547.TXT"
```

```
------_=_NextPart_000_01BE7238.71C0EB9A
Content-Type: message/rfc822

Message-ID: <B15DC0490C8AD211BDFD004005A0C2CC47EFF2@MONTANA>
From: Anthony  Estes <aestes@e-dialog.com>
To: "Hillary Gaeth (E-mail)" <HGaeth@engage.com>
Subject: * Thurs, Fri ?
Date: Tue, 9 Mar 1999 08:04:20 -0500
MIME-Version: 1.0
X-Mailer: Internet Mail Service (5.5.2448.0)
Content-Type: text/plain

------_=_NextPart_000_01BE7238.71C0EB9A--
```

A header starts with a *field name* followed by a colon and the field body. The contents of the field body may be rigidly defined or free form.

The following headers are mandatory; that is, there must be a header with each of these names:
- Date
- From, or Sender and From
- To, or CC (carbon copy), BCC (blind carbon copy)

The following headers are optional:
- Return-path
- Received
- Reply-To
- Message-ID
- In-Reply-To
- References
- Keywords
- Subject
- Comments
- Encrypted

Some of these headers are obscure and rarely used. In addition, some mail clients generate their own extra headers. Many such extra header start with the characters "X-" because if extra mail headers are added to the RFC they will never start with these characters.

A header may be split over two lines according to the following rules:
- The split must be at a place where whitespace(blank or tabs) would normally occur; for example, not in the middle of a username or similar field.
- The continuation line must start with a space or tab.

Similary, a header can have extra white spaces almost everywhere except in the middle of a field.

Two headers that are given special attention in the context of this document are those that contain the address and subject.

**b) Address**

The address is a header that contains the email address of the person receiving the message.

**c) Subject**

This is a header that describes the subject of the mail. Contained in the subject is a **Subject Token** in the form of two characters. For example, for the mail subject '** A Special Offer for Selected Managers', the **Subject Token** is **

The **Subject Token** is chosen to identify the **Test ID** of the mail message.

**d) Salutation**

The salutation is a text block in the outbound mail message that is personalized to the person receiving the message. The intention is to provide a personalized greeting and an indication of the sender.

From: Harvard Business School Publishing <hbsp@e-care.com>
To: *'esalas@protelsa.com.pe'*
Subject: ** A Special Offer for Selected Manager
Date: *Tuesday, July 14, 1998 6:47 PM*

From the Desk of Laura Winig
Harvard Business School Publishing Corporation
Boston, Massachusetts

*Tuesday, July 14, 1998*

*Ms. Elizabeth Salas*
*5700 Collins Avenue Apt 6h*
*Miami Beach, FL 33140-2308*

Dear *Ms. Salas*:

The information in italic is personalized and is combined with the remainder of the message at the time of dispatch.

**e) Body**

The body contains the main core of the message. The format and layout is fixed and not personalized for a particular test.

Simply type "YES" in your reply to this e-mail to take "Virtual Work: Real Results" for a No-Obligation Test Drive!
=----------=
Do you work with colleagues and clients in multiple locations? Communicate more by email and conference calls than through meetings? Find your "office" is wherever you are at any given moment? Then you're working "virtually" and you know that working effectively without proximity is essential in today's workplace. And you know it's not as easy as it looks.

Here at the publishing arm of Harvard Business School, we've combined extensive research and real-life examples to create "Virtual Work: Real Results"-a dynamic multimedia program that can improve your effectiveness working "virtually."
=----------=
Use this engaging tool and you'll understand:

* the dynamics and politics of working virtually-
  and how to handle tough situations when you can't be face-to-face;

* how to most effectively use email, video conferencing,
  voice conferencing-and how to overcome fear of technology;

* ways to build relationships and trust without "human touch"-

```
  and how a virtual team can work efficiently and seamlessly.
=-----------------------------------------------------------=
We bring you tricks of the trade from the experts in working virtually.
Then, you gain confidence using these techniques through an interactive case study where you lead
a virtual team through a project. You'll make decisions that determine the success of its
efforts-all in a realistic, but no-risk, environment.

Overcome the isolation and conflicting loyalties that are inherent in working in a virtual
environment-and get ready for success with "Virtual Work: Real Results."
=-----------------------------------------------------------=
Take "Virtual Work: Real Results" for a No-Obligation Test Drive.
=-----------------------------------------------------------=
Simply reply to this email and we'll send you the program with our compliments. We're confident
you'll find you're working more effectively in the virtual world. After 14 days, we'll send you
an invoice for just $295 (single user license).

  But remember, if you're not entirely pleased with the program, simply call us and we'll arrange
                              to pick it up. You will owe nothing.

Sincerely,

Laura Winig
Director
```

In the above example the response with a "YES" is sufficient to indicate the purchase of the single product on offer. In a multi-product offer, the items would be listed and associated with a letter. For this type of mailing, the responder would list the letters in the response.

A mailing may have a follow up 'reminder' flight. This reminder would not go to respondents of the original flight. For example:

```
On Wednesday, July 1, I sent you a special offer on "Virtual Work: Real Results": a new
interactive CD-ROM from Harvard Business School Publishing.

Since I haven't heard back from you, I wanted to send you a reminder Before the offer expires.

If you are simply not interested, I apologize for the intrusion.

=---------   BELOW IS A REPRINT OF THIS SPECIAL OFFER   ---------=
Simply type "YES" in your reply to this e-mail to take "Virtual Work: Real Results" for a No-
Obligation Test Drive!
=-----------------------------------------------------------=
Do you work with colleagues and clients in multiple locations? Communicate more by email and
conference calls than through meetings? Find your "office" is wherever you are at any given
moment? Then you're working "virtually" and you know that working
...
...
...
confident you'll find you're working more effectively in the virtual world. After 14 days, we'll
send you an invoice for just $295 (single user license).

  But remember, if you're not entirely pleased with the program, simply call us and we'll arrange
                              to pick it up. You will owe nothing.

Sincerely,

Laura Winig
Director
```

## f) Personal

The personal is added to the outbound message, after the mail body. The purpose of the text block is to request personal details from the respondent. The information requested is presented

in two columns, the first indicating the type of information required and the second as a place for the reply to be entered (in [..]). For example,

```
FIRST NAME:          []
LAST NAME:           []
TITLE:               []
COMPANY:             []
DEPARTMENT:          []
ADDRESS1:            []
ADDRESS2:            []
ADDRESS3:            []
CITY:                []
PROVINCE/STATE:      []
POSTAL/ZIP CODE      []
COUNTRY:             []
PHONE:               []
FAX:                 []
EMAIL:               []
```

These details are to determine the shipping and billing information.

**e) Token**

The token follows the Mail Body (or Mail Personal if applicable) and contains information about the mailing and also the addressee e.g., `[[878119|2815|1]]`

The format of a Mail Token is

**[[MID | TID | SID]]**

where

- MID is an membership ID assigned to the person receiving the outbound message
- TID is the test ID assigned to the outbound message. This would be related to the Subject Token.
- SID is the style ID assigned to the style of the mailing i.e., single product or multi-product.

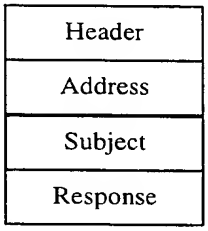
These three pieces of information uniquely identify the receiver of the outbound message and also the information they received. Hence, the processing of a response is greatly simplified if the reply returns the mail token.

In summary, an outbound message contains generic information that is the same in all the mailings of a test, and also personalized:

| *Generic* | *Personalized* |
|---|---|
| Subject | Header |
| Body | Address |
| | Salutation |
| | Personal |
| | Token |

## THE ANATOMY OF AN INBOUND E-MAIL MESSAGE

An inbound email message has a predefined structure. However, the structure may not be 'structured' sufficiently for it to be automatically processed.




**a) Headers**
The first few lines of an Inbound Mail message are Headers and have a defined format. This information is similar in format to that of the outbound message. If the response is produced by replying to an outbound message, (instead of creating it from scratch) then it is probable that the headers of the outbound will be in the inbound mail.

**b) Address**
The address is a header that contains the email address of the respondent.

**c) Subject**
This is a header that describes the subject of the mail. This is free-form text and no assumptions can be on its structure. It may be the subject that was used in the outbound mail.

**d) Response**
The response is a text block containing the message from the respondent. It should not be assumed that the response has any structure since a responder has the freedom to write a reply in "free format" and is not forced to a guideline. This creates a number of problems for the processing of an inbound response since rigid rules cannot be applied.

The points that can be noted about a response are that:
- All responses will contain headers.
- All responses will contain the responders email address.
- All responses will contain a subject. The textual content of the subject cannot be assumed since it can be freely edited and so may not resemble the content of the outbound. If a subject contains a Subject Token then it should correspond to the TID.
- If the response contains the Mail Token then the MID, TID and SID will be available and consequently it will be clear on the approach that should be taken in processing the response i.e., the handling of a single product 'YES' versus a multi-product 'ADG'.

## AN E-MAIL LIFE CYCLE

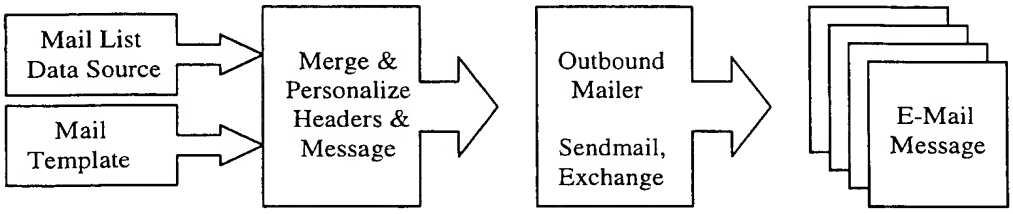
### OUTBOUND

**a) Create an outbound message**

An outbound email message consists of texts block that contains information and one or many questions or choices. The text block of an outbound mail message is sometimes referred to as a **Mail Template**.

**b) Deploy the outbound message**

The message can be deployed to anyone for whom an e-mail address is available. The address information in a **Mail List** (e.g., database, listserve) is merged with the **Mail Template** and sent. In some cases, the X-Headers are also personalized to reflect the purpose of the outbound mail message.




### INBOUND

**a) Receive a Reply**

The content of a reply can have various forms

- The reply responds to the outbound message e.g., an order.

- The reply requests to unsubscribe from future mailings. The reply contains an indication that the respondent does not wish to receive any further mailings e.g., UNSUB, UNSUBSCRIBE, UNJOIN and REMOVE.

- The reply requests customer service and ad hoc questions.

- The reply indicates a change in personal details or to be added to the mailing list.

There is also the possibility that the outbound message did not reach its final destination and that it bounced back. There are two categories of bounces, hard bounces and soft bounces.

- A hard bounce notification indicates outright failure. For a hard bounce, the subject would contain a message of the following form:

```
Returned mail: Host unknown (Name server: ssoofftteecchh.com: host not found)
```

The sender of a hard bounce is usually specific such as:

```
Mail Delivery System [MAILER-DAEMON]
```

A hard bounce can also be detected in the response X-Header:

```
Received: by mail.kersur.net (mbox peterk)
 (with Cubic Circle's cucipop (v1.31 1998/05/13) Fri Mar 19 21:04:39 1999)
X-From_: MAILER-DAEMON  Fri Mar 19 21:04:36 1999
Return-Path: <MAILER-DAEMON>
Received: from localhost (localhost)
    by mail.kersur.net (8.9.1/8.9.1) with internal id VAA20320;
    Fri, 19 Mar 1999 21:04:36 -0500 (EST)
Date: Fri, 19 Mar 1999 21:04:36 -0500 (EST)
From: Mail Delivery Subsystem <MAILER-DAEMON>
Message-Id: <199903210204.VAA20320@mail.kersur.net>
To: <peterk@sytech.com>
MIME-Version: 1.0
Content-Type: multipart/report; report-type=delivery-status;
    boundary="VAA20320.921981876/mail.kersur.net"
Subject: Returned mail: Host unknown (Name server: ssooffteecchh.com: host not found)
Auto-Submitted: auto-generated (failure)
```

The response body can also contain failure information:

```
The original message was received at Fri, 19 Mar 1999 21:04:35 -0500 (EST)
from dialup111.kersur.net [207.180.95.76]

   ----- The following addresses had permanent fatal errors -----
<JohnSmith@SSOOFFTTEECCHH.com>

   ----- Transcript of session follows -----
550 <JohnSmith@SSOOFFTTEECCHH.com>... Host unknown (Name server: ssooffteecchh.com: host not
found)
```

- Softbounces can be of three types:
  - *NonDeliveryNotification* occurs when a given message has not been delivered yet but will continue to try and deliver for a further specified period of time. This state can be detected in the response subject:

    ```
    FW: Warning: could not send message for past 4 hours
    ```

    The response can also be detected in the response body:

    ```
    **********************************************
    **      THIS IS A WARNING MESSAGE ONLY      **
    **  YOU DO NOT NEED TO RESEND YOUR MESSAGE  **
    **********************************************
    The original message was received at Tue, 9 Mar 1999 08:00:18 -0500 (EST)
    from mail.e-dialog.com [207.31.244.2]

       ----- The following addresses had transient non-fatal errors -----
    hgaeth@andexc01.cmgi.com
        (expanded from: <HGaeth@engage.com>)

       ----- Transcript of session follows -----
    hgaeth@andexc01.cmgi.com... Deferred: Connection refused by
    andexc01.cmgi.com.
    Warning: message still undelivered after 4 hours
    Will keep trying until message is 3 days old
    ```

  - *AutoResponders* are notifications which actually indicate delivery but are sent by mail agents to indicate that the user will not be able to respond immediately (possibly on vacation) but the sender should expect a response when they return.
  - *Unknown*

**b) Process the reply**

Automatic processing of an e-mail response is defined as the ability to determine accurately the requirements of the reply by using text inspection and search rules.

To automatically process an e-mail response, there are a number of criteria that need to be satisfied by the content of the reply. The main three criteria are:

**ci)** Who is the Respondent
**cii)** What outbound message is the response to
**ciii)** What does the Respondent require

The exception to the above are hard and soft bounces that are identified by other e-mail properties.

Since all legitimate mail responses will contain the e-mail address of the Sender this can be regarded as a base information for all responses. This information fulfills criteria ci) but alone is not sufficient for a response to be processed automatically.

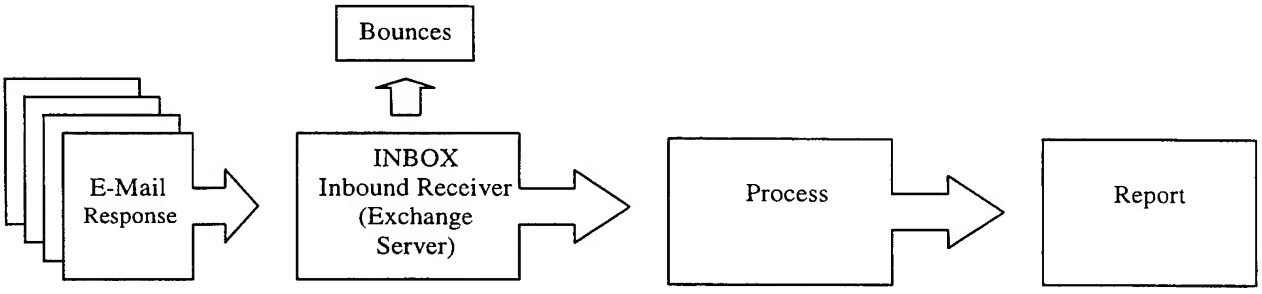
Criteria cii) can be satisfied by the Subject Token, provided the respondent has not altered it. Note that the Style ID is implied if criteria cii) is satisfied.

Another source of information is the Mail Token. For a reply that contains a Mail Token, both criteria ci) and cii) can be determined.

But how is criteria ciii) satisfied? There is no simple solution to this question since the answer lies in the body of the reply, which is in 'free form'. The only method available that can determine the requirements of the respondent is to parse the email reply based on the SID.

**c) Produce Reports**

After determining the requirement of the inbound e-mail, database entries and reports can be produced.



# Design Specification for QuickReply

## QUICKREPLY

The QuickReply application is used to process e-mail responses to mailing campaigns. The building and sending of the e-mail messages is not within the scope of QuickReply.

The test within a campaign's flight provides the outbound e-mail message. The message will contain both generic and personalized information and will normally require a response from the person the message is sent to.

Responses to a test are received in the Inbox folder of the mailbox. The design objective of QuickReply is to read the responses from the Inbox, and decide from its content the requirements of the response. On determining (or not determining) the requirement, the response is filed to pre-configured sub-folders and the appropriate tracking database is up-dated.

QuickReply will generate diagnostic information that will support the reasoning on how it reached its decision.

The main data storage area of QuickReply is Microsoft Access relational database. Appropriate records will be added to this database as the response processing is performed. In addition, it is likely there will be responses that cannot be automatically processed and, in such cases, Customer Service will use QuickReply in manual mode. Manual mode will also add records to the appropriate tables in the database.

The information in the database will be used to generate reports.

APPENDIX B

## MAILBOX ORGANIZATION

Mailings are performed on behalf of a Client. Consequently, all e-mail transfers for a particular Client will be performed within the Clients mailbox.

The organization of the Clients mailbox includes an Inbox for the responses and a pre-configured number of sub-folders where the responses are filed.

Mailbox - <Client Reference e.g., HBSP)
**Campaign CID**
**Flight FID**
**AC**
YYMMDDhh
**AddChange**
YYMMDDhh
**BouncesHard**
YYMMDDhh
**BouncesSoft**
YYMMDDhh
**Master**
**Order**
YYMMDDhh
**Unclear**
YYMMDDhh
**Unsubscribe**
YYMMDDhh
**Inbox**
YYMMDDhh

In the above, YYMMDDhh is a directory named after the year, month, day and hour. This format reflects the date and time the entries were placed in that folder.

Each test flight will have a number of responses associated with it. When QuickReply categorizes a response, it will be automatically moved from the Inbox to the appropriate sub-folder.

- **AC** Responses for customer service to process manually
- **AddChange** Responses that contain personal detail changes
- **BouncesHard** Hard bounces
- **BouncesSoft** Soft bounces
- **Master** Master version of the outbound mail
- **Order** Responses with an order
- **Unclear** Responses that are unclear as to how they should be processed
- **Unsubscribe** Response to unsubscribe

## E-MAIL STYLES

The Style ID (SID) of a response indicates the approach that should be taken by QuickReply during processing.

The SID is a two-digit numerical value

**XY**

where:
- X=1 indicates the outbound Personal block is included in the outbound message.
- Y=message layout style described below.

The following two layout styles are supported:

**a) Single Product Offer – layout style=1**
This style offers one product. The respondent is asked to reply "YES" if they are interested.

**b) Multi-Product Offer – layout style=2**
The mailing information is based on information in a relational database. This style offers a number of products the respondent can choose from. For example, the outbound message could contain:

```
Your choices (detailed below) are:

A:     The work of Leadership Audio
B:     Leading Your People Audio
C:     Leading Change Successfully Audio
D:     Overcoming Resistance to Change Audio
E:     Gaining Competitive Advantage Audio
```

The respondent makes a choice and responds by stating their requirement in the free format e.g., "please send me ABE".

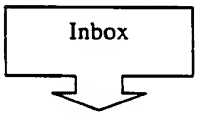
The number of items can vary as well as the choice symbol i.e., 1,2,3, could be used instead of A,B,C.

## PROCESSING INBOUND MAIL AND REPORTING

The general processing and reporting function is described below. The general flow in processing responses is to determine the membership ID (MID), then the test ID (TID) and style ID (SID) and then perform an examination of the response to determine the requirement.

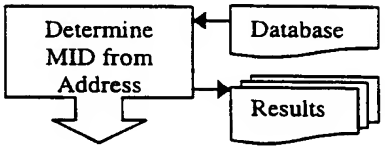
The processing criteria can be summarized as follows:
**ci)** who is the Respondent?
**cii)** what is the response to?
**ciii)** what does the Respondent require?

All inbound responses are targeted to the Inbox of the Client's Mailbox. On a periodic basis, the responses in the Inbox will be processed.

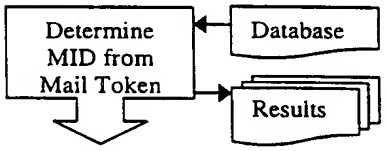



**ci) Who is the respondent? – Determine the MID**
The are several ways in which the Membership Information can be determined. The importance of the MID is that could provide a handle to the Members personal information

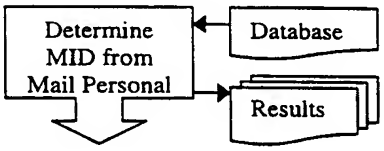
a) Extract the Response Address from the response. Determine if a unique record exists for the Address. If a unique address exists then the MID is determined. If the record is not unique then examine the mail token.




b) If the Mail Token exists then the MID is determined. Use the MID to confirm that the respondents e-mail address is the same as that in the database. If the addresses are different then report that this was the case but continue to process.




c) If the SID indicates that the Personal block was included in the outbound, the extract the Member details from the Mail Personal. The extraction assumes that the response information is in square brackets '[]'. The field definitions are defined in the database together with an indication of those that have to be completed by the responder. If Mail Personal is not complete (the fields are indicated in the database), move the response to Unclear and report.

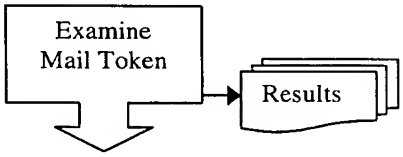



d) If the MID cannot be determined, move the response to Unclear and report.

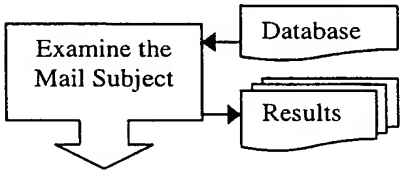
**cii) What is the response to? – Determine the TID and SID**

The next stage in response processing is to determine what the response is to. This can be determined from the Test ID.

a) If the Mail Token exists then extract the TID and SID. If the Mail token is absent, report but continue the determination of the TID.




b) Determine the TID from the database based on the Mail Subject of the response. If the look-up is successful, then the SID will also be determined.

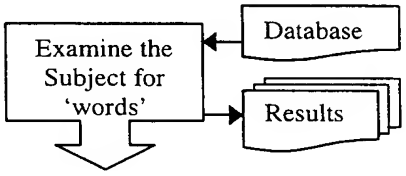



c) At this stage the TID and SID should be known. If not, move the response to Unclear and report.

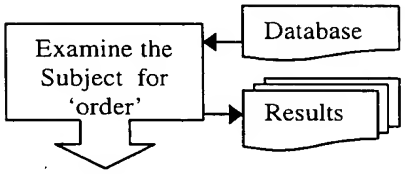
**ciii) What does the Respondent require?**

With the MID, TID and SID determined, the response message(s) are still of no value until it is established what the respondent requires. The obvious approach to this problem is to compare the response with the original and try to make some sense of the differences.

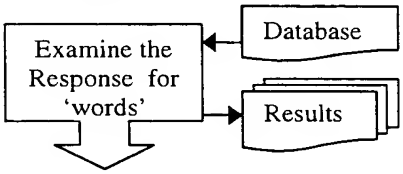
a) If the Mail Subject did not contain the Subject Token, examine for words that appear in the word action table. Any bounced responses are moved to the Bounce sub-folders. Any unsubscribe requests are moved to the Unsub sub-folder.




b) If the SID indicates a single item promotion, examine the Mail Subject for words that appear in the word action table. Any order responses are moved to the Orders sub-folders.

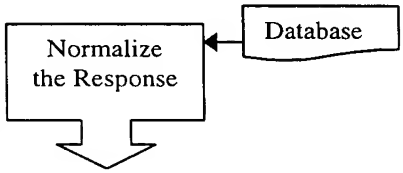



c) Examine the response for words that appear in the word action table. Any bounced responses are moved to the Bounce sub-folders. Any unsubscribe requests are moved to the Unsub sub-folder.

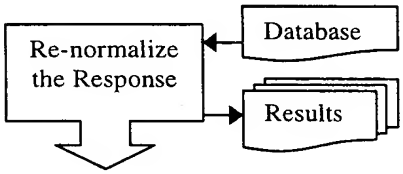



d) Remove all the text of the outbound message from the response.

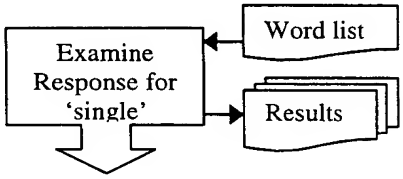
e) Normalize the response. Remove characters from the beginning of each line. The list of characters to be removed are in the word replacement table with ModeID=LineStart.



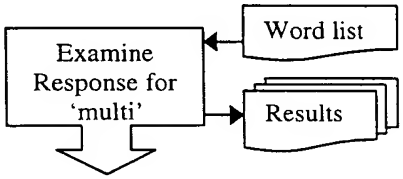

f) Replace phases from the normalized response. The phases that are replaced are given in the word replacement table with ModeID=PhaseReplace.




g) If the SID indicates that there is only a single item on promotion, examine the normalized response for words that indicate an order of a single product item. The words are in the word action table with the ActionID=SingleOrder. If order




h) If the SID indicates that there are multi-items on promotion, examine the normalized response for phrases that indicate an order of multi-items. The words are in the word action table with the ActionID=MultiOrder. In the case of multi-products, the



information the StartOption and EndOption from the bindings table are used to verify that item(s) ordered are in the correct choice range.

i) Any order requests are moved to the Orders sub-folder.

j) If the purpose of the response cannot be determined, then move the response to the Unclear sub-folder.

## DATABASE ORGANIZATION

QuickReply uses two types of databases that are stored in Microsoft Access. The first database is part of the QuickReply application and contains high-level information on the campaigns, flights and tests. The second database is specific to a particular Client Test.

### a) QuickReply Database

The QuickReply database contains the information that binds campaigns, flights and tests.

| | |
|---|---|
| **tblTestBindings** | **- contain Test bindings** |
| Test ID | **unique** |
| Client ID | |
| Client Test Database | database name used for the test information |
| Subject | subject text of the outbound test |
| Style ID | the style of the outbound message |
| StartOption | character of the first item in the test |
| EndOption | character of the last item in the test |
| Campaign ID | |
| Mailing ID | |
| Flight ID | |

| | |
|---|---|
| **tblOutboundPersonal** | **- contains personal details that appear in a test** |
| Test ID | **unique** |
| Question | prompt displayed in personal block e.g., First Name |
| AnswerLen | the maximum length of the answer |
| AnswerReq? | flag to indicate that an answer must be given |

| | |
|---|---|
| **tblWordActions** | **- contains words that convey an action** |
| Word | **unique** |
| Action ID | action id for this word e.g., 'bounce' |

| | |
|---|---|
| **tblWordReplacement** | **- contains phrases and their replacement** |
| Phase | **unique** |
| Replacement | replacement to the phrase |
| Mode ID | type of replacement |

### b) Client Test Database

| | |
|---|---|
| **tblMembers** | **- contains member details** |
| Member ID | **unique** |
| Email | |
| Prefix | |
| First | |
| Middle | |

| | |
|---|---|
| Last | |
| Suffix | |
| Title | |
| Company | |
| BillAddress1 | ShipAddress1 |
| BillAddress2 | ShipAddress2 |
| BillAddress3 | ShipAddress3 |
| BillCity | ShipCity |
| BillState | ShipState |
| BillZip | ShipZip |
| BillCountry | ShipCountry |
| Tel | |
| Ext | |
| Fax | |

# EDRMA

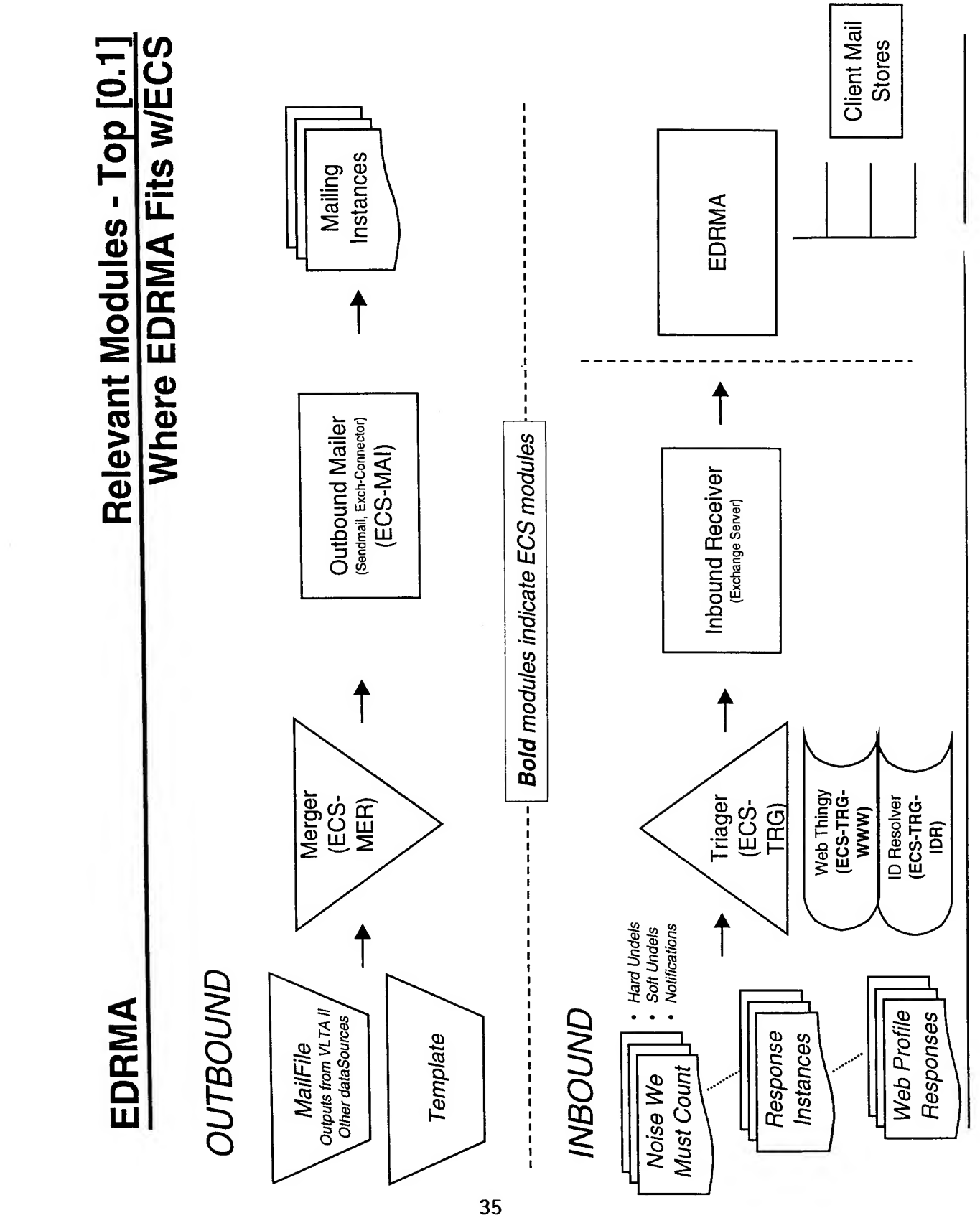
## Introduction

This document is intended to provide a schematic synopsis of E-Dialog Response Management Architecture (EDRMA).

Thereby it is hoped that the design of the Verbind E-Mail Channel Server (ECS) can best accommodate EDRMA's input requirements, and so EDRMA's output requirements may be adjusted to match those of Verbind LifeTime's architecture (VLTA)

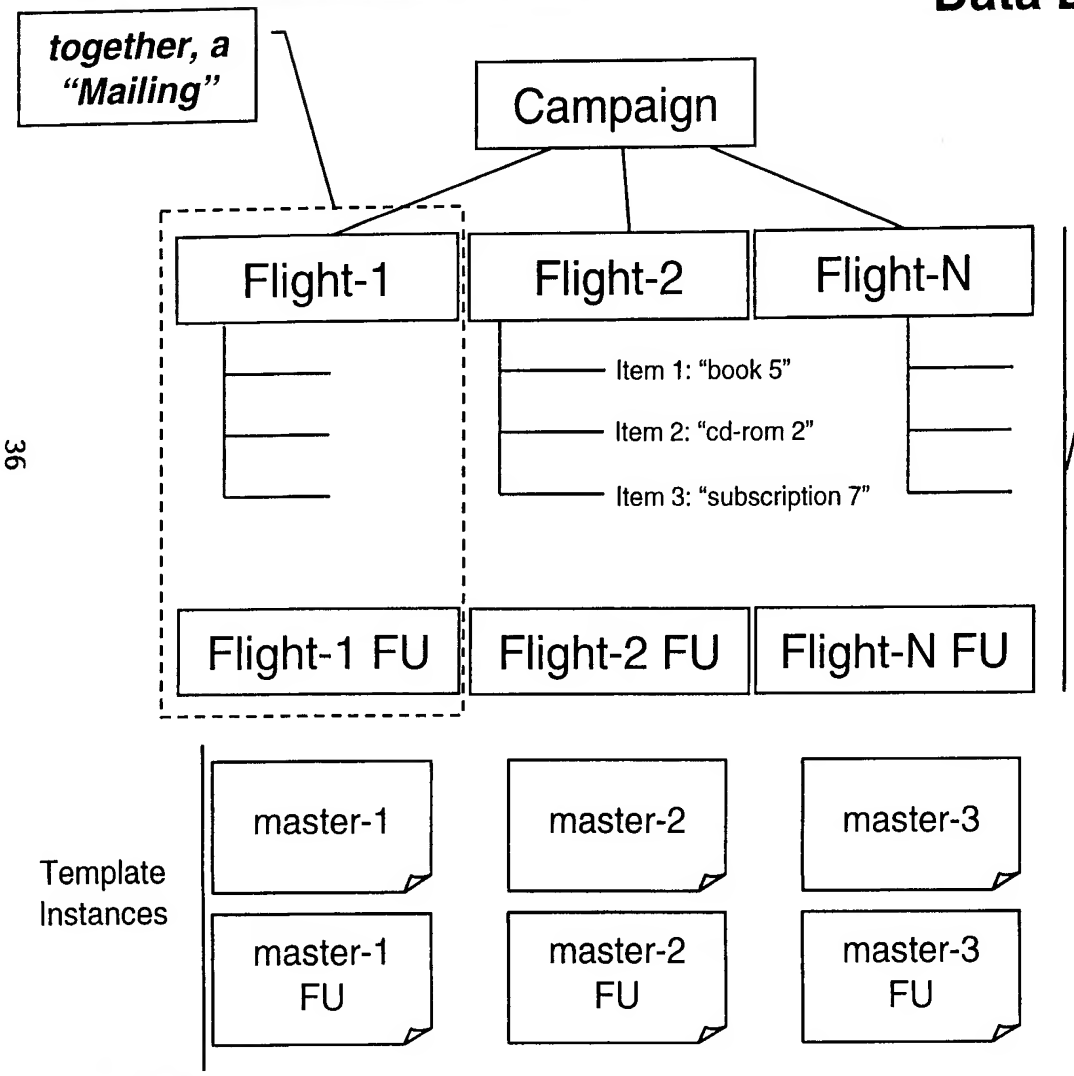


"First, some acronyms…" - *Anonymous*


EDRMA
Relevant Modules - Top [0.1]
Where EDRMA Fits w/ECS
OUTBOUND
MailFile
Outputs from VLTA II
Other dataSources
Template
Merger (ECS-MER)
Outbound Mailer
(Sendmail, Exch-Connector)
(ECS-MAI)
Mailing Instances
Bold modules indicate ECS modules
INBOUND
Hard Undels
Soft Undels
Notifications
Noise We Must Count
Response Instances
Web Profile Responses
Triager (ECS-TRG)
Web Thingy (ECS-TRG-WWW)
ID Resolver (ECS-TRG-IDR)
Inbound Receiver
(Exchange Server)
EDRMA
Client Mail Stores

# EDRMA Model

## Data Entity Relationships [0.5]




Campaign
- has 1 CID
- has 1:N Flights (FIDs)
- has 1 template class (TCID)
  - eNews
  - QuickReply - single
  - QuickReply - multi
- Approved Response Templates (template ID)

Mail Key Codes
- [[CustIDIListIDIFIDITCID] <now>
- [[**MIID**IFIDITCID]] <future>
- **MIID** -> global mail instance ID
- placement: X-Header, Subject, Footer

Mailing (e.g., F1 & F1-FU )
- has 1 MID
- have 2 FIDs, one for F, FU
- has one SOAC (client code)

Any Flight has 1:N items for sale
- has one FID
- has one TCID
- (typ) shares a SOAC with its FU
- Any Item
  - has 1 InstanceID (our code)
  - has 1 ItemID (client code)

# Canonical Data Structures - Exchange Server Data Store [0.2]

## Mailbox - <ClientFullName> *(not alias: "hbsp")*

## <CampaignName>[<CID>]

- **ApprovedResponseTemplates <templateID>**
- **<FlightName>[<FID>]**
  - **AC** *(i.e., "Advocacy Care")*
    - + <date: YYMMDDhhmm>
  - **ADDCHANGE**
    - + <date: YYMMDDhhmm>
  - **HARDBOUNCES** *(i.e., hard undelivereds... "jsmith@foo.com is not a valid addressee")*
    - + <date: YYMMDDhhmm>
  - **INBOX (monolithic, this Mailbox)**
  - **MASTER (contains master template, this FID)**
  - **ORDERS**
    - + <date: YYMMDDhhmm>
      - » [[custID|ListID|FlightID|TCID]] << footer tags (x-header, subject)
  - **SOFTBOUNCES**
    - + **DELIVERYNOTIFICATIONS**
      - » <date: YYMMDDhhmm>
    - + **AUTORESPONDERS**
      - » <date: YYMMDDhhmm>
    - + **UNKNOWN**
      - » <date: YYMMDDhhmm>
  - **UNCLEAR**
    - + <date: YYMMDDhhmm>
  - **UNSUBS**
    - + <date: YYMMDDhhmm>



WO 01/06435 PCT/US00/19403

**VBA.PKinboxInspector**
interface: GUI / VBA
data: MAPI
inbox sorting, folder management application

**VBA.PKresponseProcessor**
interface: GUI / VBA
data: MAPI
response review and report preparation application

**PL.AEprocOrder()**
interface: commandline
data: ADO 2.0
process raw "order e-mails" by TCID
uses cf file rulesets for document preprocessing and data element parsing tied to CID; other rules, hardcoded
generates:
Acceptable output for review, annotated
Exceptions, annotated
Truncated BODYs, annotated
Raw fields output , annotated
Raw fields exceptions , annotated
Rule-eval log (exhaustive)

**PL.AEprocBatPrep()**
interface: commandline
data: ADO 2.0
takes selected output from PL.AEprocOrder() and transforms to a batch transfer specification via a field map and transform rules cf

**PL.AEprocUpdateBatVerbind()**
TBD

**PL.AEscrubNormalCanon()**
<< not used on the response side >>
interface: commandline
data: file handles
scrubber, normalizer, canonicalizer
also generates scrambled (non-predictable) row Ids and flags AOLs

# Process Stages [0.5]

## Preliminary ECS hooks anticipated



Preprocess Stage

- inspect Inbox using VBA.PKinboxInspector
  - auto-creates folder structure (previous slide)
  - facilitates auto-sort of items into ORDERS, UNSUBS, UNDELS, HARDS, SOFTS, ADDCHANGE, etc.
  - facilitates manu-sort of items into AC, and exception
- report preparation by TCID via AEprocOrder()
  - produces: OUT_report, EXC_report && EXC_BODY diagnostic report

Processing Stage using VBA.PKresponseProcessor

- for each EXC_
  - inspect, correct, reconcile (via Mailing Table lookups) and commit
- for each OUT_
  - inspect and commit to report (or not)
- Acceptable UNION of EXC_ && OUT_ -> Reporting, Update Stages { AEprocBatPrep() II AEprocUpdateBatVerbind() }
- Hard exceptions are tagged as such and become Followup RFC's to get additional (critical information)
- FUP (FUPID -> RFC) tags affect routing; tie-back to HARD exception row in this EXC_ report for closure

Response Follow-up Confirmation Stage

- for each non-BOUNCE (ORDERS, UNSUBS, etc.), respond to respondents with an appropriate "confirmation of receipt/action taken" message
- using relevant response template store (**templateID**)
- this class of response likewise tagged for routing (FUPID -> confirm)

Reporting Stage

- produce order report
  - deliver via fax
  - post to client private web application
  - deliver as formatted batch

Update Stage

- deliver formatted batch to {Verbind, Database} -> sp_???, SQL Executive

```
#
# procOrder.pl (c) 1998,1999 E-Dialog, Inc. All Rights Reserved.
#
# PURPOSE DISCUSSION
#
# program accepts a raw email stream from MS Exchange Server via export to ADO-compliant datastore
# then uses email body preprocessing and extraction rules - tailored per campaign in ./cf/ - to construct order reports.
#
#       cf files are campaign optimized:
#
#       mailingDBLayout.cf                      -> field mappings for a campaign's master mailing table
#       messageBodyDataLayout.cf                -> DSNs, field mappings, critical rule designations, order-designation bounds, synonymn table
#       messageBodyIndicateAddressChange.cf     -> rulesets for indicating ADDRESS CHANGES
#       messageBodyIndicateBuyAll.cf            -> rulesets for indicating BUY ALL state
#       messageBodyPreProcRules.cf              -> body text preprocessor configuration and rulesets
#
# program produces diagnostic and order-entry bound output files and logs outcomes of all ruleset evaluations leading to
# preparation of those output files, which include:
#
#       <$ARGV[1]>              -> summary order report file (designed for data entry, faxing, emailing to fulfillment)
#       EXC_<...>               -> (companion) summary exception report (same format as s. order report with annotations to indicate rule failures for man
ual review)
#       OUT_<...>               -> detailed order stream file (all fields discretely mapped and normalized for input into batch postprocessor)
#       EXC_DETAIL_<...>        -> (companion) ..exceptions..discrete fields, etc.
#       EXC_BODY_<...>          -> annotated diagnostic report containing all message bodies - sans original message - for aid in resolving exceptions man
ually
#
# output files are (default) tab-delimited text
#
# PROGRAM REQUIRES
#
#       Perl 5.003 interpreter later compiled for WIN32
#       MS ADO components 1.5 (2.0+ recommended)
#
# RELEASE HISTORY
#
# 981020AE: 0.5         first usage: to extract carol10 order reports
# 981204AE: 0.9         upgrade to handle carol12, multiple item selections
# 981208AE: 1.1         improve flagging
# 981211AE: 1.5         adapt to extract IDEAS@WORK add/changes
# 981222AE: 2.3.1       fix bugs in EXC_BODY reporting / enhance it
# 981222AE: 2.4         add cfPATH support
# 981223AE: 2.4.1       cfPath logging; fix synonymn (SUBJECT TOKEN) lookup <trailing \s*>
# 981223AE: 2.5         reorder reporting fields
# 981224AE: 2.5.1       reorder reporting fields
# 981225AE: 2.5.2       update SHIPPING_ADDRESS fields to reflect presence of T,B & S diagnostic fields
# 981226AE: 2.6         code review/dox; update cf to require MAILINGID
# 990106AE: 2.6.5       standardize on LOG ID for use in address change
# 990129ae: 2.7         add support for separate billing, shipping addresses
# 990201ae: 3.0         add record-recovery via ADO -> mailing database lookups
# 990202ae: 3.0.1       record-update ADO -> mailing database
# 990202ae: 3.0.2       fix leading digits bug in getDateTimeStamp ftn
# 990203ae: 3.1         fix MDB query bugs; introduce detection of SELECT && UPDATE SUCCESS; verify decision-tree based UPDATES
# 990205ae: 3.1.1       fix address3 bug; provide regression compatibility for /ADDCHANGE
# 990206ae: 3.1.2       throw .noTok as a HARD_EXC

#################### INCL ######################

use Win32::OLE;

#################### ENV  ######################

$GrequiredARG   = 4;
$Grevision      = '3.1.2';

if(scalar(@ARGV) < $GrequiredARG) { die "($Grevision) Usage: procOrder.pl [userName] [reportName] [cfPATH <campaignMnemonic>] [ <buyToken> | /multi | /add
Change ]\n"; }

$Guser                          = $ARGV[0];
```

```
$GreportFile                    = $ARGV[1];
$GcfPath                        = $ARGV[2];
$Gsubj_buyToken                 = $ARGV[3];
$GexcReportFile                 = 'EXC_'.$GreportFile;
$GexcBODYReportFile             = 'EXC_BODY_'.$GreportFile;
$GoutFile                       = 'OUT_'.$GreportFile;
$GexceptionsFile                = 'EXC_DETAIL_'.$GreportFile;

if($ARGV[4] == 1) { $GDEBUG = 1; }      else {$GDEBUG = 0;}
if($ARGV[4] == 2) { $LGDEBUG_FTN = 1; } else {$LGDEBUG_FTN = 0; }

#################### DEFN ####################

## MISC GLOBALS ##

$Gplatform                      = 'WIN';
$GeventType                     = 'INFO';
$basePath                       = '.';
$GfieldDelimiter                = "\t";
$Gspace                         = ' ';
$Gnewline                       = "\n";
$Gcomma                         = ',';
$Gpipe                          = '|';
$eventRequiresFUP               = 'Y';
$GmultiItemOrderSwitch          = '/MULTI';
$GaddChangeSwitch               = '/ADDCHANGE';

############# OUTPUT FILE LAYOUTS ###############

## DO NOT change alpha ordering of lowercase field names (e_ .. t_)
## This is vital in the BODY field layout defn file since the rules reference the letter prefixes

## reportFile (note: EXC_reportFileName also written from this template)

        %GreportFileRecord = (

                a_LID                   => '_e_$thisLogKey',
                ab_LINE                 => '<fill-in>',
                b_RID                   => '_e_$thisRecordID',
                c_THIS_SUBJECT          => '_e_$thisSubject',
                d_THIS_BODY_BOTTOM      => '_e_$thisBodyBottom',
                e_THIS_BODY_TOP         => '_e_$thisBodyTop',
                ia_FUP_REQUIRED         => '_e_$eventRequiresFUP',
                ib_LOCATION_BUY_TOKEN   => '_e_$thisBuyStatus',
                j_REVIEW_ACTION_TAKEN   => '<review>',
                za_SELECTED_ITEMS       => '_e_$thisItemsSelectedStack',
                zd_PRIORITY             => '_e_$thisMailingID',
                zf_CUSTNO               => '_e_($thisCustNo==-1 || $thisCustNo == 0)?"":$thisCustNo',
                zi_LISTID               => '_e_($thisListID==-1)?"":$thisListID',
                zm_FROM_ADDRESS         => '_e_$thisFromAddress',
                zp_SPECIAL_INSTRUCTIONS => '<none>',
                zr_PHONE                => '_e_$results{\'r_bphone\'}',
                zx_BILLING_ADDRESS      => '_e_$thisBillingAddressBlock',
                zy_SHIPPING_ADDRESS     => '_e_$thisShippingAddressBlock',
                zz_MDB_BILLING_ADDRESS  => '_e_$thisMDBbillingAddressBlock',
        );


## outFile

        %GoutFileRecord = (

                a_LID                   => '_e_$thisLogKey',
                aa_RID                  => '_e_$thisRecordID',
                ab_THIS_SUBJECT         => '_e_$thisSubject',
                ac_THIS_BODY_BOTTOM     => '_e_$thisBodyBottom',
                ad_THIS_BODY_TOP        => '_e_$thisBodyTop',
                b_LISTID                => '_e_$thisListID',
                bb_CUSTNO               => '_e_$thisCustNo',
```

```
136                 c_PRIORITY              => '_e_$thisMailingID',
137
138                 e_bfirst                => '_e_$results{\'e_bfirst\'}',
139                 f_bmiddle               => '_e_$results{\'f_bmiddle\'}',
140                 g_blast                 => '_e_$results{\'g_blast\'}',
141                 h_btitle                => '_e_$results{\'h_btitle\'}',
142                 i_bcompany              => '_e_$results{\'i_bcompany\'}',
143                 j_bdepartment           => '_e_$results{\'j_bdepartment\'}',
144                 k_baddress1             => '_e_$results{\'k_baddress1\'}',
145                 l_baddress2             => '_e_$results{\'l_baddress2\'}',
146                 m_baddress3             => '_e_$results{\'m_baddress3\'}',
147                 n_bcity                 => '_e_$results{\'n_bcity\'}',
148                 o_bstate                => '_e_$results{\'o_bstate\'}',
149                 p_bpostal               => '_e_$results{\'p_bpostal\'}',
150                 q_bcountry              => '_e_$results{\'q_bcountry\'}',
151                 r_bphone                => '_e_$results{\'r_bphone\'}',
152                 s_bfax                  => '_e_$results{\'s_bfax\'}',
153                 t_bemail                => '_e_$results{\'t_bemail\'}',
154
155                 ue_sfirst               => '_e_$results{\'ue_sfirst\'}',
156                 uf_smiddle              => '_e_$results{\'uf_smiddle\'}',
157                 ug_slast                => '_e_$results{\'ug_slast\'}',
158                 uh_stitle               => '_e_$results{\'uh_stitle\'}',
159                 ui_scompany             => '_e_$results{\'ui_scompany\'}',
160                 uj_sdepartment          => '_e_$results{\'uj_sdepartment\'}',
161                 uk_saddress1            => '_e_$results{\'uk_saddress1\'}',
162                 ul_saddress2            => '_e_$results{\'ul_saddress2\'}',
163                 um_saddress3            => '_e_$results{\'um_saddress3\'}',
164                 un_scity                => '_e_$results{\'un_scity\'}',
165                 uo_sstate               => '_e_$results{\'uo_sstate\'}',
166                 up_spostal              => '_e_$results{\'up_spostal\'}',
167                 uq_scountry             => '_e_$results{\'uq_scountry\'}',
168                 ur_sphone               => '_e_$results{\'ur_sphone\'}',
169                 us_sfax                 => '_e_$results{\'us_sfax\'}',
170                 ut_semail               => '_e_$results{\'ut_semail\'}',
171
172                 ux_FROM_ADDRESS         => '_e_$thisFromAddress',
173                 uy_LOCATION_BUY_TOKEN   => '_e_$thisBuyStatus',
174                 v_SUBJECT               => '_e_$thisSubject',
175                 z_FUP_REQUIRED          => '_e_$eventRequiresFUP',
176                 zz_REVIEW_TYPE          => '_e_$EXCEPTION_TYPE',
177         );
178
179 ## exceptionsFile - BODY only
180
181         %GexceptionsBODYFileRecord = (
182
183                 a_LID                   => '_e_("==========================================================================================================
    ==========\n>>".$thisLogKey."<<")',
184                 aa_REVIEW_TYPE          => '_e_$EXCEPTION_TYPE',
185                 ab_EXCEPT_FLAGS         => '_e_$eventRequiresFUP',
186                 b_RID                   => '_e_("<<".$thisRecordID.">>")',
187                 u_FROM_ADDRESS          => '_e_("||".$thisFromAddress."||")',
188                 v_SUBJECT               => '_e_("||".$thisSubject."||\n==========================================================================================
    ================================")',
189                 w_BODY_BELOW            => '_e_$thisFullNumberedBody',                  # full body
190
191         );
192
193 ## activityLogFile
194
195         %GactivityLogRecord = (
196
197                 a_LID                   => '_e_$thisLogKey',
198                 b_user                  => '_e_$Guser."/".$GcfPath',
199                 c_dateStamp             => '_e_&getDateStamp(\'WIN\',$LGDEBUG_FTN)',
200                 e_RID                   => '_e_$thisRecordID',
201                 f_clientName            => '_e_$GclientName',
202                 g_eventType             => '_e_$eventType',
```

```
203                 h_eventDesc             => '_e_$eventDesc',
204                 z_FUP_REQUIRED          => '_e_$eventRequiresFUP',
205         );
206
207
208 ##################### DATA #####################
209
210 &getKeyPos_Outfile(\%GoutFileRecord);          # identify the fieldwise position of fields in the outfile for canonicalization (use EXC file as model)
211
212 ##print "--- debug --- FRM_ADD FIELDPOS= $fromAddressFieldPos\n";
213
214 $GDSN                           = 'dsnOrderProcessing';
215
216 if ($Gplatform ne 'WIN') {$relativePath = '/logs/'} else { $relativePath = '\\logs\\';}
217
218 $GactivityLogFileName           = $basePath.$relativePath.'activityLog.tab';
219 $GactivityLogKeysFileName       = $basePath.$relativePath.'activityLogKeys.tab';
220
221
222 if ($Gplatform ne 'WIN') {$relativePath = '/db/'} else { $relativePath = '\\db\\';}
223
224 $GexcReportDBkeysFileName       = $basePath.$relativePath.'excReportDBkeys.tab';
225 $GexceptionsDBkeysFileName      = $basePath.$relativePath.'excDetailDBkeys.tab';
226 $GexceptionsBODYDBkeysFileName  = $basePath.$relativePath.'excBodyDBkeys.tab';
227 $GoutFileDBkeysFileName         = $basePath.$relativePath.'outFileDBkeys.tab';
228 $GreportFileDBkeysFileName      = $basePath.$relativePath.'reportFileDBkeys.tab';
229
230 if ($Gplatform ne 'WIN') {$relativePath = 'cf'.'/'.$GcfPath} else { $relativePath = '\\cf\\'."$GcfPath\\";}
231
232 $GbodyDataLayoutFileName        = $basePath.$relativePath.'messageBodyDataLayout.cf';
233 $GbodyPreProcRulesFileName      = $basePath.$relativePath.'messageBodyPreProcRules.cf';
234 $GbodyBuyAllFileName            = $basePath.$relativePath.'messageBodyIndicateBuyAll.cf';
235 $GbodyAddressChangeFileName     = $basePath.$relativePath.'messageBodyIndicateAddressChange.cf';
236 $GmailingDBLayoutFileName       = $basePath.$relativePath.'mailingDBLayout.cf';
237
238 ################################################
239 ##################### MAIN #####################
240 ################################################
241
242 $MODE                   = '';
243 $MULTI_BUY_ON           = 0;
244 $ADD_CHANGE_ON          = 0;
245 $Gsubj_buyToken         = uc($Gsubj_buyToken);
246
247 $MODE = "<TOKEN = |$Gsubj_buyToken|>";
248 if($Gsubj_buyToken =~ /\/MULTI/)        { $MULTI_BUY_ON = 1; $MODE .= '<MULTI BUY ON>';}
249 if($Gsubj_buyToken =~ /\/ADDCHANGE/)    { $ADD_CHANGE_ON = 1; $MODE .= '<ADDCHANGE ON>'; }
250
251 print "[procOrder R.$Grevision] $MODE\n".($GDEBUG?"\n<DEBUG: $GDEBUG:$LGDEBUG_FTN>\n\n":"\n");
252
253 ## open CF files
254
255 print "** Opening: $GbodyPreProcRulesFileName...\n";
256         @GPreProcRules                                  = &loadFile_SCALAR($GbodyPreProcRulesFileName);
257
258 print "** Opening: $GbodyBuyAllFileName...\n";
259         @GBuyAllIndicators                              = &loadFile_SCALAR($GbodyBuyAllFileName);
260
261 print "** Opening: $GbodyAddressChangeFileName...\n";
262         @GAddressChangeIndicators                       = &loadFile_SCALAR($GbodyAddressChangeFileName);
263
264 print "** Opening: $GbodyDataLayoutFileName...\n";
265         %LAYOUT                                         = &HASHloadFieldMap($GbodyDataLayoutFileName,$LGDEBUG_FTN);
266
267 unless($ADD_CHANGE_ON) {
268
269         print "** Opening: $GmailingDBLayoutFileName...\n";
270         %MDBLAYOUT = &HASHloadFieldMap($GmailingDBLayoutFileName,$LGDEBUG_FTN);
271
```



WO 01/06435
PCT/US00/19403

F:_Development\PRJ\PRJ_hbsp_extractOrder-WORKING\procOrder.pl
Printed at 19:48 on 06 Feb 1999

```
272 }
273
274 ## open I/O
275
276 if (!open(FH_log, ">>$GactivityLogFileName"))          {$eventType = 'ABORT'; $eventDesc = "MAIN::Cannot open GactivityLogFileName: \[$fileName\]"; &logE
    vent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
277 if (!open(FH_out, ">$GoutFile"))                     {$eventType = 'FAIL'; $eventDesc = "MAIN::Cannot open GoutFile: \[$GoutFile\]"; &logEvent(\*FH_log
    , $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
278 if (!open(FH_report, ">$GreportFile"))                {$eventType = 'FAIL'; $eventDesc = "MAIN::Cannot open GreportFile: \[$GreportFile\]"; &logEvent(\*
    FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
279 if (!open(FH_excReport, ">$GexcReportFile"))           {$eventType = 'FAIL'; $eventDesc = "MAIN::Cannot open excReportFile: \[$GexcReportFile\]"; &logEve
    nt(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
280 if (!open(FH_excBODYReport, ">$GexcBODYReportFile"))  {$eventType = 'FAIL'; $eventDesc = "MAIN::Cannot open excBODYReportFile: \[$GexcBODYReportFile\]";
     &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
281 if (!open(FH_exc, ">$GexceptionsFile"))                {$eventType = 'FAIL'; $eventDesc = "MAIN::Cannot open GexceptionsFile: \[$GexceptionsFile\]"; &log
    Event(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
282
283 ## load %results fieldName keys from layout cf file (now in %LAYOUT)
284
285 @fieldKeys              = undef;
286 @fieldKeys              = &getFieldKeys(\%LAYOUT);
287
288         ##print "--debug--\n"; foreach(@fieldKeys) { print "**".$_."| \n"; }
289
290 $numberRequiredFields   = scalar(@fieldKeys);
291
292 if(!defined($LAYOUT{'orderProcessingDSN'})) { $LAYOUT{'orderProcessingDSN'} = $GDSN; }
293
294 print "** Loading daily order data source: $LAYOUT{'orderProcessingDSN'}...\n";
295 @DB                     = &read_DSNtoAOH($LAYOUT{'orderProcessingDSN'},$LGDEBUG_FTN);
296
297 $totalRecords           = $#DB +1;
298 $GclientName            = $LAYOUT{'thisClientName'};
299
300 ## startup OK event
301
302 $eventType = '_X_INFO'; $eventDesc = "procOrder R.$Grevision START OK - USER: $Guser/$GcfPath CLIENT: $GclientName  opDSN ($totalRecords): $LAYOUT{'orderP
    rocessingDSN'} mdbDSN: $LAYOUT{'orderProcessingDSN'} -> $LAYOUT{'thisMailingTable'}  ($totalRecords recs) BODYdefn: $GbodyDataLayoutFileName"; &logEvent(\
    *FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
303
304 print "\n\n** Status...\n\n";
305 print "USER:\t\t$Guser \n";
306 print "CLIENT:\t\t$GclientName\n";
307 print "cfPATH:\t\t$GcfPath\n\n";
308 print "TOTAL RECORDS \t\t -> \"$LAYOUT{'orderProcessingDSN'}\":  $totalRecords\n";
309 unless($ADD_CHANGE_ON) { print "MAILING TABLE SOURCE \t -> \"$LAYOUT{'thisMailingDSN'} -> $LAYOUT{'thisMailingTable'}\"\n\n"; }
310 print "\n(Note: if this information is not correct, hit <CNTRL> - C to abort and correct <you have 5 seconds>)\n\n"; sleep 5;
311
312 print "** Begin processing...\n\n";
313
314 ## flag duplicate e-mail addresses in order stream
315
316 %dupsMap = &checkDupsReturnMap(\@DB,$GDEBUG);
317
318 ####################
319 #### main loop ####
320 ####################
321
322 $excpCount              = 0;
323 $warnCount              = 0;
324 $outFileCount           = 0;
325 $exceptionsFileCount    = 0;
326 $excReportFileCount     = 0;
327 $reportFileCount        = 0;
328 $FUPcount               = 0;
329 $reportLineCount        = 0;
330
331 for $mainCount (0 .. $#DB) {
332
```



WO 01/06435
PCT/US00/19403

```
333 $thisRecordID                   = $mainCount+1;
334 $eventRequiresFUP               = '';
335 $RECORD_VALID                   = 1;
336 $thisBuyStatus                  = '';
337 $thisShippingAddressBlock       = undef;
338 $thisBillingAddressBlock        = undef;
339 $thisMDBbillingAddressBlock     = undef;
340 $thisFullNumberedBody           = "\n";
341
342 ## get relevant fields, normalized, this record
343
344 $thisFromAddress          = &normalizeSpacing(lc($DB[$mainCount]{'FromAddress'}));
345 $thisFromAddress          =~ s/[\t\r]/$Gspace/g;
346
347 $thisFromName             = &normalizeSpacing($DB[$mainCount]{'FromName'});
348 $thisFromName             =~ s/[\t\r]/$Gspace/g;
349
350 $thisSubject              = &normalizeSpacing(uc($DB[$mainCount]{'Subject'}));
351 $thisSubject              =~ s/[\t\r]/$Gspace/g;
352
353 $thisBody                 = uc($DB[$mainCount]{'Body'});
354 $thisBody                 =~ s/[\t\r]/$Gspace/g;
355
356 ## split BODY into discrete lines
357
358 @BODYlines                = undef;
359 @topLines                 = undef;
360 @bottomLines              = undef;
361
362 push(@BODYlines, $1) while ($thisBody =~ s/^([^\012\015]*)(\012\015?|\015\012?)//);
363
364 ## skip lines that are the quoted BODY unless they're the order form -- example delimiters:
365 ## $BODYstartToken = 'HARVARD BUSINESS SCHOOL PUBLISHING';
366 ## $BODYendToken = 'FIRST NAME\:';
367
368 $BODYstartToken           = $LAYOUT{'startDelimiter'};
369 $BODYendToken             = $LAYOUT{'endDelimiter'};
370 $BODYstartToken           =~ s/[\t\n\r]//g;
371 $BODYendToken             =~ s/[\t\n\r]//g;
372 $startToken_ON            = 0;
373 $endToken_ON              = 0;
374 $thisBody                 = undef;
375 $thisBodyTop              = undef;
376 $thisBodyBottom           = undef;
377 $lastLineExcluded         = undef;
378
379 for($count = 0; $count <= $#BODYlines; $count++) {
380
381         $line                   = $BODYlines[$count];
382         $thisFullNumberedBody   .= ('['.$count."] \t".$line."\n");
383
384         unless($startToken_ON || $line =~ /^\>+/) {unless ($line !~ /\S+?/) {$thisBodyTop .= ($line.$Gpipe)}; push(@topLines,('['.$count.']  |'.$line.'|')
    ); }
385
386                 if(($line =~ /$BODYstartToken/) .. ($line =~ /$BODYendToken/)) {
387
388                         if(!$startToken_ON && ($line =~ /$BODYstartToken/))     {$startToken_ON = 1;}
389                         if(!$endToken_ON && ($line =~ /$BODYendToken/))         {$endToken_ON = 1; $thisBody .= ($line.$Gnewline); unless($line =~ /^\>+/
    || $line !~ /\S+?/ || $line =~ /[\[\]]+/) {$thisBodyBottom .= ($line.$Gpipe)} }
390
391                 next;
392                 }
393
394         ## ignore bottom lines if part of the original -> indicators:  ">" || "[" || "]"
395
396         if($startToken_ON && $endToken_ON) { unless($line =~ /^\>+/ || $line !~ /\S+?/ || $line =~ /[\[\]]+/) {$thisBodyBottom .= ($line.$Gpipe); push(@bo
    ttomLines, ('['.$count.']  |'.$line.'|'));} }
397         $thisBody .= ($line.$Gnewline);
398 }
```



WO 01/06435

PCT/US00/19403

```
399
400 $thisBodyTop    =~ s/[\t\r]/__/g;
401 $thisBodyBottom =~ s/[\t\r]/__/g;
402
403                 if($GDEBUG) { print "\n\n\n** DEBUG__THISBODY=".$thisBody."\n\n\n";}
404
405 ## log/print warning if cannot find FOOTER ID BLOCK: CUSTNO|LISTID|MAILINGID|DIALOGID || if bad match yields the same for CUSTNO|LISTID
406
407         $thisCustNo             =  -1;
408         $thisListID             =  -1;
409         $thisMailingID          =  -1;
410         $thisDialogID           =  -1;
411         $LISTCID_EXCEPT_ON      =   0;
412         $MAILINGID_EXCEPT_ON    =   0;
413
414         if($thisBody !~ /\[\[([^|]*?)\|([^|]*?)\|([^|]*?)\|?([^|]*?)\]\]/) {
415
416                 $LISTCID_EXCEPT_ON = 1;
417
418                 $eventType = 'EX_ERR'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   UNMATCHED FOOTER ID BLOCK: CUSTNO|LISTID|MAILINGID|DIALOGID";
    &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
419                 $eventType = 'INFO'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   >>> ATTEMPTING SUBJECT LINE MAILING ID RECOVERY >>>"; &logEvent(
    \*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
420
421 ## test to see if there is a cf file synonymn (**,++, etc) for the MAILING ID which can be recovered in the absence of the footer token
422
423                 if($thisMailingID == -1) { $thisMailingID = &subjectSynonymnLookup($thisSubject,\%LAYOUT); }
424                 if($thisMailingID == -1) {
425
426                         $RECORD_VALID=0;
427                         $MAILINGID_EXCEPT_ON = 1;
428                         $eventType = 'EX_ERR'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   MAILING ID RECOVERY WAS NOT SUCCESSFUL"; &logEvent(\*F
    H_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
429
430                 }
431
432                 if($thisMailingID != -1) {
433
434                         $eventType = 'INFO'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   <<< MAILING ID RECOVERY SUCCESSFUL USING: $thisSubjectMa
    ilingIDToken -> $LAYOUT{$thisSubjectMailingIDToken}"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
435
436                 }
437         }
438
439         else {
440
441                 if($GDEBUG) { print "***DEBUG_  element1= $1 __ element2= $2 ___ element3= $3 ___ element4= $4\n"; sleep 1; }
442
443                 $element1 = $1; $element2 = $2; $element3 = $3; $element4 = $4;
444
445                 $thisCustNo             = ($element1 =~ /\S+?/) ? $element1 : -1;
446                 $thisListID             = ($element2 =~ /\S+?/) ? $element2 : -1;
447                 $thisMailingID          = ($element3 =~ /\S+?/) ? $element3 : -1;
448                 $thisDialogID           = ($element4 =~ /\S+?/) ? $element4 : -1;
449
450                 if ($thisCustNo == -1 && $thisListID == -1) {
451
452                         $LISTCID_EXCEPT_ON = 1;
453                         $MAILINGID_EXCEPT_ON = 1;
454                         $eventType = 'EX_ERR'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   BAD MATCH:  CUSTNO, LISTID"; &logEvent(\*FH_log, $even
    tType, $eventDesc, $Guser, $LGDEBUG_FTN);
455                 }
456
457                 ## log/print INFO if cannot find mailingID
458
459                 if($thisMailingID == -1) { $eventType = 'INFO'; $eventDesc = " \<".$thisRecordID."\>   NO MAILING ID MATCH"; &logEvent(\*FH_log, $eventTyp
    e, $eventDesc, $Guser, $LGDEBUG_FTN);}
460
461                 ## log/print INFO if cannot find dialogID
```

```
462
463                 if($thisDialogID == -1) { $eventType = 'INFO'; $eventDesc = " \<".$thisRecordID."\>   NO DIALOG ID MATCH"; &logEvent(\*FH_log, $eventType,
    $eventDesc, $Guser, $LGDEBUG_FTN);}
464         }
465
466 ## check for /multi || quoted BUY TOKEN (eg: "YES")
467
468         $buyTokenPosition       = 'none';
469         $thisItemsSelectedStack = undef;
470         @thisItemsSelected      = undef;
471
472         unless($ADD_CHANGE_ON) {
473
474                 ## check for buy tokens, eg: YES in SUBJECT, TOP, BOTTOM || letter items: ABC || A,B,C || A-C
475
476                         $buyTokenPosition = &detectBuyTokens($MULTI_BUY_ON,$Gsubj_buyToken,$thisSubject,$thisMailingID,$thisBodyTop,$thisBodyBottom,\%LAYO
    UT,\@topLines,\@bottomLines,$GDEBUG);
477
478                 ## check for no-match case and except
479
480                         if($buyTokenPosition eq 'none') { $eventRequiresFUP .= '.noTok' ; $FUPcount++; $eventType = 'ERR_FUP'; $warnCount++; $eventDesc =
    " \<".$thisRecordID."\>   SUBJECT, TOP, BOTTOM -> NO BUY TOKEN MATCH ($Gsubj_buyToken)"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN)
    ; }
481
482                 ## if match and MULTI_BUY_ON, prepare order items listing
483
484                         if($buyTokenPosition ne 'none' && $MULTI_BUY_ON) {
485
486                                 $thisItemsSelectedStack = &extractDedupItemsSelectedStack(@thisItemsSelected);
487
488                         }
489         }
490
491         ################
492         ## INNER LOOP ##
493         ################
494
495         %results                = {};
496         $countFields            = 0;
497         $nullCriticalFields     = 0;
498         $ADDRESS_ADEQUATE       = 1;
499
500 ## process body fields by key; keys == standard field names; values == this BODY's field names mapped thereon
501
502         foreach (@fieldKeys) {
503
504         $key = $_;
505
506         ## print "--DEBUG-- key = |$key| \n";
507
508                 $thisLayoutFieldName = uc($LAYOUT{$key});
509                 $thisLayoutFieldName =~ s/\s+$//;
510
511                 ###################################
512                 ###### MAIN MATCHING BLOCK ########
513                 ###################################
514
515                 $MATCH_DATA_ON = 0;
516                 $RULE = -1;
517
518                 $expectedMatch          = $thisLayoutFieldName.'\:.*?\[([^\[]+?)\]';
519                 $noBracketsMatch        = $thisLayoutFieldName.'\:.*?([^\012\015]+?)';
520
521                 CASE:  {
522
523                         TRY_EXPECTED_MATCH:     if($thisBody =~ /$expectedMatch/)               { $MATCH_DATA_ON = 1; $matchElement = $1; $RULE = 1; last
    CASE; }
524                         TRY_NO_BRAKETS_MATCH:   if($thisBody =~ /$noBracketsMatch/)             { $MATCH_DATA_ON = 1; $matchElement = $1; $RULE = 2; last
    CASE; }
```



WO 01/06435
PCT/US00/19403

```
525
526                 }
527
528 ## A MATCH WAS FOUND, THIS KEY ... push into results set
529
530                 if($MATCH_DATA_ON) {
531
532                         $countFields++;
533                         $matchElement  =~ s/[^\w\s\-\.\/\#\!\@]/$Gspace/g;
534                         $results{$key} =  &normalizeSpacing($matchElement);
535
536 ## print "--DEBUG-- result = |$results{$key}| \n";
537
538 ## build shipping and billing address blocks
539
540                         CASE: {
541
542                                 if($key =~ /u[a-z]_/) {
543
544                                         ## construct SHIPPING ADDRESSBLOCK for report
545
546                                         if ($key =~ /[hijklmq]\_/) { $thisShippingAddressBlock .= (length($results{$key}) > 0)?($results{$key}.$Gpipe):''; }
547                                         if ($key =~ /[efgnop]\_/) { $thisShippingAddressBlock .= (length($results{$key}) > 0)?($results{$key}.$Gspace):''; }
548
549                                 last CASE;
550                                 }
551
552                                 if($key =~ /[^u]_/) {
553
554                                         ## construct BILLING ADDRESSBLOCK for report
555
556                                         if ($key =~ /[hijklmq]\_/) { $thisBillingAddressBlock .= (length($results{$key}) > 0)?($results{$key}.$Gpipe):''; }
557                                         if ($key =~ /[efgnop]\_/) { $thisBillingAddressBlock .= (length($results{$key}) > 0)?($results{$key}.$Gspace):''; }
558
559                                 last CASE;
560                                 }
561
562                         }
563
564                         ## check for null critical fields: any absence here will throw exception, unless CUSTNO
565
566 ## print "--debug-- |$LAYOUT{'criticalFields'}| \n";sleep 1;
567
568                         if ($key =~ /[$LAYOUT{'criticalFields'}]\_/ && $results{$key} !~ /\S+?/ && $thisCustNo < 1) {
569
570                                 $RECORD_VALID=0; $ADDRESS_ADEQUATE = 0;
571                                 $eventRequiresFUP .= (($eventRequiresFUP =~ /badAd/)?'':'.badAd'); $FUPcount++; $eventType = 'EX_FUP'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   CRITICAL STANDARD FIELD_VALUE IS NULL: \[$thisLayoutFieldName\]"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
572
573                         }
574
575                 }
576
577 ## ALL MATCHES FAILED, THIS KEY
578
579                 if(!$MATCH_DATA_ON) {
580
581                         $results{$key} = undef;
582                         $eventType = 'EX_ERR'; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   STANDARD FIELD_NAME=FIELD_VALUE PAIR UNPARSABLE: \[$thisLayoutFieldName\]"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
583
584                 # check to see is unparsable field is a critical field
585                 # critical fields -> from CF file: any absence here will throw exception
586
```



WO 01/06435
PCT/US00/19403

```
587                         if ($key =~ /[$LAYOUT{'criticalFields'}]\_/) {
588
589                                 $RECORD_VALID=0; $ADDRESS_ADEQUATE = 0;
590                                 $eventRequiresFUP .= (($eventRequiresFUP =~ /badAd/)?'':'.badAd'); $FUPcount++; $eventType = 'EX_FUP'; $excpCount++; $even
    tDesc = " \<".$thisRecordID."\>   UNPARSABLE STANDARD FIELD_NAME=FIELD_VALUE PAIR IS CRITICAL: \[$thisLayoutFieldName\]"; &logEvent(\*FH_log, $eventType,
    $eventDesc, $Guser, $LGDEBUG_FTN);
591                         }
592                 }
593
594         }
595
596         ######################
597         #### END INNER LOOP ###
598         ######################
599
600 ######################
601 ### SUMMARY RULES  ###
602 ######################
603
604 ## throw EX_ LISTNO/CUSTNO error exception if address is not OK && !phone, depending on CID_LID_REQUIRED from cf file
605
606         if($LAYOUT{'CID_LID_REQUIRED'}) {
607
608                  if($LISTCID_EXCEPT_ON) {
609
610                         $RECORD_VALID = 0;
611                         $eventRequiresFUP .= (($eventRequiresFUP =~ /chkCLID/)?'':'.chkCLID'); $FUPcount++; $eventType = 'EX_FUP'; $excpCount++; $eventDes
    c = " \<".$thisRecordID."\>   EITHER CID || LID ABSENT WHEN CF CRITICAL"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
612
613                 }
614
615         }
616
617         if(!$LAYOUT{'CID_LID_REQUIRED'}) {
618
619                 if($LISTCID_EXCEPT_ON && !($ADDRESS_ADEQUATE && $results{'r\_phone'} !~ /\S+?/)) { $RECORD_VALID = 0; }
620
621         }
622
623 ## throw EX_ MAILINGID exception if cf file says it's required
624
625         if($LAYOUT{'MAILINGID_REQUIRED'}) {
626
627                  if($MAILINGID_EXCEPT_ON) {
628
629                         $RECORD_VALID = 0;
630                         $eventRequiresFUP .= (($eventRequiresFUP =~ /chkMID/)?'':'.chkMID'); $FUPcount++; $eventType = 'EX_FUP'; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   MAILING ID ABSENT WHEN CF CRITICAL"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
631
632                 }
633
634         }
635
636 ## throw INFO if less than number required
637
638         if(($countFields < $numberRequiredFields)  && $thisCustNo < 1) {
639
640                 $eventType = 'INFO'; $eventDesc = " \<".$thisRecordID."\>   (OVERALL) NOT ALL STANDARD FIELDS FOUND: $countFields ($numberRequiredFields)"
    ; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
641         }
642
643 ## tag duplicates for FUP
644
645 if($dupsMap{$mainCount} =~ /\#\#\#.+\#\#\#/) { $eventRequiresFUP .= (($eventRequiresFUP =~ /dupAd/)?'':'.dupAd'); $FUPcount++; }
646
647 ## catch thisBodyTop and thisBodyBottom blank yet address still extracted adequately (eg happens when cut & paste responses between the body delimiters)
648
649 if($RECORD_VALID && $thisBodyTop !~ /\S+?/ && $thisBodyBottom !~ /\S+?/) {
650
```



WO 01/06435
PCT/US00/19403

```
651         $RECORD_VALID = 0;
652         $eventType = 'EX_ERR'; $eventRequiresFUP .= '.chkBody' ; $FUPcount++; $excpCount++; $eventDesc = " \<".$thisRecordID."\>   CUSTOMER RESPONSE (Top,
    Bottom) NOT FOUND WHEN EXPECTED"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
653
654 }
655
656 ############################################################
657 #### RECORD INVALID: Attempt recovery from mailing database ####
658 ############################################################
659
660 $RECORD_RECOVERED = 0;
661
662 if(!$RECORD_VALID && !$ADD_CHANGE_ON) {
663         $eventType = 'INFO'; $eventDesc = " \<".$thisRecordID."\>   >>> BAD RECORD: ATTEMPTING RECOVERY-LOOKUP USING \"$thisFromAddress\", $LAYOUT{'thisMa
664 ilingDSN'} -> $LAYOUT{'thisMailingTable'}"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
665
666         %recoveredResults = undef;
667         %recoveredResults = &querySELECT_DB(\%LAYOUT,'EMAIL',$thisFromAddress,$LGDEBUG_FTN);
668
669 ## foreach(keys(%recoveredResults)) { print "=debug== key = $_ ___ value = $recoveredResults{$_} \n"; }
670
671         CASE: {
672
673                 if($recoveredResults{'_exit_'} < 1) {
674
675                         $RECORD_VALID = 0;
676                         $eventType = 'EX_ERR'; $eventRequiresFUP .= (($eventRequiresFUP =~ /badMDB/)?'':'.badMDB') ; $FUPcount++; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   MAILING TABLE RECOVERY-LOOKUP FAILED ON \"$thisFromAddress\""; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_F
    TN);
677
678                 last CASE;
679                 }
680
681                 if($recoveredResults{'_exit_'} == 1) {
682
683                         $RECORD_RECOVERED = 1;
684                         $RECORD_VALID = 1;
685                         $eventType = 'WRN_FUP'; $eventRequiresFUP .= (($eventRequiresFUP =~ /goodMDB/)?'':'.goodMDB'); $FUPcount++; $excpCount++; $eventDe
    sc = " \<".$thisRecordID."\>   <<< MAILING TABLE RECOVERY-LOOKUP SUCCESSFUL USING \"$thisFromAddress\""; &logEvent(\*FH_log, $eventType, $eventDesc, $Guse
    r, $LGDEBUG_FTN);
686
687                         ## construct $thisMDBbillingAddress
688
689                         foreach $key(sort(keys(%MDBLAYOUT))) {
690
691                                 $value = $MDBLAYOUT{$key};
692
693                         ## print "**DEBUG key = $key ___ value = $value \n";
694
695                                 if ($key =~ /[hijklmq]\_/) { $thisMDBbillingAddressBlock .= (length($recoveredResults{$value}) > 0)?($recoveredResults{$va
    lue}.$Gpipe):''; }
696                                 if ($key =~ /[efgnop]\_/) { $thisMDBbillingAddressBlock .= (length($recoveredResults{$value}) > 0)?($recoveredResults{$val
    ue}.$Gspace):''; }
697
698                         }
699
700                         ## restore mailingID and CID, if blank
701
702 ## print "**DEBUG mailingID = $recoveredResults{'ED_MAILINGID'} __ custNo = $recoveredResults{'CID'} __ current custno = |$thisCustNo|\n";
703                         if($thisMailingID !~ /\S+?/ || $thisMailingID == -1)    { $thisMailingID        = $recoveredResults{'ED_MAILINGID'}; }
704                         if($thisCustNo !~ /\S+?/ || $thisCustNo == -1)          { $thisCustNo           = $recoveredResults{'CID'}; }
705
706                 last CASE;
707                 }
708
709         }
710
711
```



WO 01/06435
PCT/US00/19403

```
712 }
713
714 #### add an empty flag where SHIPPING ADDRESS is returned blank
715
716 if($thisShippingAddressBlock !~ /\S+?/) { $thisShippingAddressBlock = '{ SAME }'; }
717 if($thisMDBbillingAddressBlock !~ /\S+?/) { $thisMDBbillingAddressBlock = '{ N/A }'; }
718
719 #### tag address block exceptions with diagnostic ques
720
721 if(!$RECORD_VALID) {
722
723         CASE: {
724
725                 if($thisBillingAddressBlock !~ /\S+?/ && ($thisBodyTop =~ /\S+?/ || $thisBodyBottom =~ /\S+?/))         { $thisBillingAddressBlock = '=NO_
    VALID_ADD/INSPECT='; last CASE;}
726                 if($thisBillingAddressBlock !~ /\S+?/ && $thisBodyTop !~ /\S+?/ && $thisBodyBottom !~ /\S+?/)          { $thisBillingAddressBlock = '{ BO
    DY_EMPTY/INSPECT }'; last CASE; }
727                 if($thisBillingAddressBlock =~ /\S+?/ && !$ADDRESS_ADEQUATE)                                          { $thisBillingAddressBlock = 'CRIT
    _FLD_NUL/INSPECT ->|'.$thisBillingAddressBlock.'|'; last CASE; }
728
729                 $thisBillingAddressBlock = '=UNKNOWN_ERR/INSPECT=|'.$thisBillingAddressBlock; last CASE;
730
731         }
732
733 $eventRequiresFUP = ($eventRequiresFUP !~ /\S+?/) ? '.inspect' : $eventRequiresFUP;
734 }
735
736 ########################################
737 ## write valid record data to outfiles ##
738 ########################################
739
740 $ED_ORDER_VALUE = 1;
741 $EXCEPTION_TYPE = 'OK';
742 $UPDATE_SUCCESSFUL = 0;
743 $THIS_KEY_FIELD = undef;
744 $THIS_KEY_FIELD_VALUE = undef;
745
746         if($RECORD_VALID) {
747
748                 unless($ADD_CHANGE_ON) {
749
750                         CASE: {
751
752                                 if(&queryUPDATE_DB(\%LAYOUT,$THIS_KEY_FIELD_VALUE = $thisFromAddress,$THIS_KEY_FIELD = "EMAIL","ED_ORDER",$ED_ORDER_VALUE,
    "ED_MAILACTION",-1,$RECORD_RECOVERED,$LGDEBUG_FTN)) { $UPDATE_SUCCESSFUL=1; last CASE; };
753                                 if(&queryUPDATE_DB(\%LAYOUT,$THIS_KEY_FIELD_VALUE = $thisCustNo,$THIS_KEY_FIELD = "CID","ED_ORDER",$ED_ORDER_VALUE,"ED_MAI
    LACTION",-1,$RECORD_RECOVERED,$LGDEBUG_FTN))        { $UPDATE_SUCCESSFUL=1; last CASE; };
754                                 if(&queryUPDATE_DB(\%LAYOUT,$THIS_KEY_FIELD_VALUE = $thisListID,$THIS_KEY_FIELD = "ED_LID","ED_ORDER",$ED_ORDER_VALUE,"ED_
    MAILACTION",-1,$RECORD_RECOVERED,$LGDEBUG_FTN))     { $UPDATE_SUCCESSFUL=1; last CASE; };
755
756                         }
757
758                 }
759
760                 if(!$UPDATE_SUCCESSFUL) {
761
762                         $RECORD_VALID = 0;
763                         $eventType = 'EX_ERR'; $eventRequiresFUP .= (($eventRequiresFUP =~ /badUpMDB/)?'':'.badUpMDB') ; $FUPcount++; $excpCount++; $event
    Desc = " \<".$thisRecordID."\>   (MANUAL UPDATE REQUIRED) MAILING TABLE UPDATE FAILED ON ALL KEYS - LAST TRY: \"$THIS_KEY_FIELD -> $THIS_KEY_FIELD_VALUE\"
    "; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
764
765                 }
766
767         }
768
769         if(!$RECORD_VALUE && !$UPDATE_SUCCESSFUL) {
770
771                 $eventType = 'EX_ERR'; $eventRequiresFUP .= (($eventRequiresFUP =~ /noUpMDB/)?'':'.noUpMDB') ; $FUPcount++; $excpCount++; $eventDesc = " \
    <".$thisRecordID."\>   INVALID RECORD: MAILING TABLE NOT UPDATED"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
```



WO 01/06435
PCT/US00/19403

```
772
773         }
774
775 #### Buy tokens not found and not ADDRESS_CHANGE; move to EXC report
776
777         unless($ADDRESS_CHANGE) { if($buyTokenPosition eq 'none') { $RECORD_VALID = 0; $ED_ORDER_VALUE = 2; } }
778
779         if($RECORD_VALID) {
780
781                 $reportLineCount++;
782
783                 ## update MAILING TABLE
784
785
786                 ## write out files
787
788                 &writeRecord(\*FH_out,$GfieldDelimiter,($thisKey=&getNextDBkey_return($GoutFileDBkeysFileName,$LGDEBUG_FTN)),\%GoutFileRecord,'EXTENDED',
    $LGDEBUG_FTN);
789                 &writeRecord(\*FH_report,$GfieldDelimiter,($thisKey=&getNextDBkey_return($GreportFileDBkeysFileName,$LGDEBUG_FTN)),\%GreportFileRecord,'NO
    RMAL', $LGDEBUG_FTN);
790
791                 ## include ALL BODYs in the EXC_BODY file for potential review
792
793                 if($eventRequiresFUP =~ /\S+?/) { $EXCEPTION_TYPE = 'SOFT-EXC'; }
794
795                         &writeRecord(\*FH_excBODYReport,$GfieldDelimiter,$thisBODYlogKey=&getNextDBkey_return($GexceptionsBODYDBkeysFileName,$LGDEBUG_FTN)
    ,\%GexceptionsBODYFileRecord,'BODY', $LGDEBUG_FTN);
796
797         $outFileCount++;$reportFileCount++;
798         }
799
800
801 ##########################################
802 ## write exception record data to outfiles ##
803 ##########################################
804
805         if(!$RECORD_VALID) {
806
807                 $EXCEPTION_TYPE = 'HARD-EXC';
808
809                 &writeRecord(\*FH_exc,$GfieldDelimiter,$thisKey=&getNextDBkey_return($GexceptionsDBkeysFileName,$LGDEBUG_FTN),\%GoutFileRecord,'EXTENDED',
    $LGDEBUG_FTN);
810                 &writeRecord(\*FH_excReport,$GfieldDelimiter,$thisKey=&getNextDBkey_return($GexcReportDBkeysFileName,$LGDEBUG_FTN),\%GreportFileRecord,'NO
    RMAL',$LGDEBUG_FTN);
811                 &writeRecord(\*FH_excBODYReport,$GfieldDelimiter,$thisBODYlogKey=&getNextDBkey_return($GexceptionsBODYDBkeysFileName,$LGDEBUG_FTN),\%Gexce
    ptionsBODYFileRecord,'BODY', $LGDEBUG_FTN);
812
813         $exceptionsFileCount++; $excReportFileCount++;
814         }
815
816 print "\n";
817 }
818
819 ######################
820 #### end main loop ####
821 ######################
822
823 ## print STDOUT exit state
824
825 $dateNow = &getDateStamp('WIN',$LGDEBUG_FTN);
826
827 print "\n** [procOrder version $Grevision] Done!  $totalRecords records processed by $Guser/$GcfPath for client: $GclientName **\n\n";
828 print "SUMMARY REPORT for: ".$dateNow."\n\n";
829 print "FILES WRITTEN \n";
830 printf  "\n%10d",$reportFileCount;
831         print  " records written to REPORT FILE: $GreportFile";
832 printf  "\n%10d",$excReportFileCount;
833         print  " records written to EXC_REPORT FILE: $GexcReportFile";
834 printf  "\n%10d",$outFileCount;
```

```
835         print  " records written to OUTPUT FILE (all fields): $GoutFile";
836 printf  "\n%10d",$exceptionsFileCount;
837         print  " records written to EXCEPTIONS FILE (all fields): $GexceptionsFile";
838 print "\n\nLOGGING\n\n";
839 print "All rule failure events for all time logged in detail to: $GactivityLogFileName\n";
840 printf  "\n%10d",$totalRecords;
841 print " BODYs for this session are keyed, categorized in: $GexcBODYReportFile, for review in an editor\n";
842
843 $eventType = '_X_INFO'; $eventDesc = "procOrder R.$Grevision EXIT OK - USER: $Guser/$GcfPath CLIENT: $GclientName  opDSN ($totalRecords): $LAYOUT{'orderPr
    ocessingDSN'} mdbDSN: $LAYOUT{'orderProcessingDSN'} -> $LAYOUT{'thisMailingTable'}  ($totalRecords recs) BODYdefn: $GbodyDataLayoutFileName"; &logEvent(\*
    FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
844
845 close(FH_out); close(FH_exc); close(FH_log); close(FH_report); close(FH_excReport);close(FH_excBODYReport);
846
847 exit;
848
849 ################################################
850 ################### SUBS #######################
851 ################################################
852
853 #
854 # ---------------------------------------------------------------------
855 #
856
857 sub alphaOrdered {
858
859 my(@singleElementArray) = @_;
860
861 my $alpha       = 0;
862 my $i           = 0;
863
864 my $base = $singleElementArray[0];
865
866 for($i = 1; $i <= $#singleElementArray; $i++) {
867
868         $ordBase = ord($base); $ordArr = ord($singleElementArray[$i]);
869
870 ##      print "==debug=$i= base = |$base| ordBase= $ordBase ___ singleElementArray = $singleElementArray[$i] ordArr = $ordArr \n";
871
872         if($ordBase > $ordArr) { return $alpha; }
873         $base = $singleElementArray[$i];
874
875 }
876
877 $alpha = 1;
878
879 return $alpha;
880
881 }
882
883 #
884 # ---------------------------------------------------------------------
885 #
886 sub canonicalize {
887
888 my($inRecord) = @_;
889 my($elementsIndex, $fieldsIndex, $rec, $buf, $field) = undef;
890 my(@field) = undef;
891 my $space = ' ';
892 my $dashEscape = $space.'_d_esc_'.$space;
893
894 $inRecord = uc($inRecord);
895
896 my @allFields = undef;
897
898 @allFields = split(/$GfieldDelimiter/,$inRecord);
899 my $fieldsIndex = undef;
900
901 for($fieldsIndex=0; $fieldsIndex <= $#allFields; $fieldsIndex++) {
```

```
902
903         if ($fieldsIndex != $emailFieldPos && $fieldsIndex != $fromAddressFieldPos) {
904
905                 if( $fieldsIndex ==  $companyFieldPos ||  $fieldsIndex == $lastNameFieldPos || $fieldsIndex == $firstNameFieldPos || $fieldsIndex == $titl
    eFieldPos || $fieldsIndex == $countryFieldPos || $fieldsIndex == $departmentFieldPos  || $fieldsIndex == $cityFieldPos)  { $allFields[$fieldsIndex] =~ s/\
    -/$dashEscape/g; }
906
907                 $allFields[$fieldsIndex] =~ s/\s+$//;                           # trailing space
908                 $allFields[$fieldsIndex] =~ s/^\s+//;                           # leading space
909                 $allFields[$fieldsIndex] =~ s/[\"\`\,\\\/\(\)]/$space/g;        # extraneous chars
910                 $allFields[$fieldsIndex] =~ s/\s{2,}/$space/g;                  # more than one separating space
911
912         }
913                 elsif ($fieldsIndex == $emailFieldPos || $fieldsIndex != $fromAddressFieldPos) { $allFields[$fieldsIndex] =~ s/$space//g; }
914
915         @field = split($space,$allFields[$fieldsIndex]);
916
917         $field = undef;
918
919         for($elementsIndex = 0; $elementsIndex <= $#field; $elementsIndex++) {
920
921                 CONVERT_TITLE_CASE: {
922
923                 $leaveUpper = 1;
924
925                         if($fieldsIndex == $postalCodeFieldPos) { last CONVERT_TITLE_CASE; }
926                         if($headerFields[$fieldsIndex] !~ /\w*IX\w*$/ && $field[$elementsIndex] =~ /^[^AEIOU\.][^AEIOU\.][^AEIOU\.]?$/) { last CONVERT_TIT
    LE_CASE; }
927                         if($field[$elementsIndex] =~ /^[A-Z]\.[A-Z]\.[A-Z]?\.?$/)   { last CONVERT_TITLE_CASE; }
928
929                         unless($field[$elementsIndex] =~ /(AND)|(OR)|(NEW)|(UND)|(AT)|(CO)|(LTD)|(INC)|(OF)|(THE)|(RD)/) {
930
931                                 if($fieldsIndex == $firstNameFieldPos && ($field[$elementsIndex] =~ /^[A-Z][A-Z]$/ || $field[$elementsIndex] =~ /^[A-Z]\.?
    [A-Z]\.[A-Z]?$/)) { last CONVERT_TITLE_CASE; }
932                                 if(($fieldsIndex == $IXFieldPos ||  $fieldsIndex == $companyFieldPos)  && ($field[$elementsIndex] =~ /^[A-Z]\.?[A-Z]\.?[A-
    Z]$/ || $field[$elementsIndex] =~ /^[I][IV][I]*$/ || $field[$elementsIndex] =~ /^[^JS]\.?[A-Z]\.?$/ )) { last CONVERT_TITLE_CASE; }
933                                 if($fieldsIndex == $titleFieldPos && $field[$elementsIndex] =~ /^[ARHMGIVUCS][EMSQ\&TRAFIOPV][PADO\.]*$/ && $field[$elemen
    tsIndex] !~ /[MD][RS]/)     { last CONVERT_TITLE_CASE; }
934                                 if($fieldsIndex == $countryFieldPos && ($field[$elementsIndex] =~ /^[A-Z]\.[A-Z]\.?[A-Z]?\.?$/ || $field[$elementsIndex] =
    ~ /^[A-Z][A-Z][A-Z]?$/) ) { last CONVERT_TITLE_CASE; }
935
936                         }
937
938                         unless($fieldsIndex == $stateFieldPos && length($field[$elementsIndex])>5) { if($fieldsIndex == $stateFieldPos || $fieldsIndex ==
    $postalCodeFieldPos)   { last CONVERT_TITLE_CASE; } }
939
940                 $leaveUpper = 0;
941
942
943                         $buf = lc($field[$elementsIndex]);
944
945                         if($fieldsIndex != $emailFieldPos && $fieldsIndex != $fromAddressFieldPos)  { $buf = ucfirst($buf); last CONVERT_TITLE_CASE; }
946                 }
947
948         if($leaveUpper) { $buf = $field[$elementsIndex]; }
949
950         $field .= ($buf.$space);
951         }
952
953 $rec .= ($field.$GfieldDelimiter);
954 }
955
956 chop($rec);
957
958 $rec =~ s/$dashEscape/\-/g;
959
960 return $rec;
961 }
962
```



WO 01/06435

PCT/US00/19403

```
963 #
964 # ------------------------------------------------------------------------------------------
965 #
966
967 sub checkDupsReturnMap {
968
969 my($ptrAOHDB,$GDEBUG)    = @_;
970 my(@DB)                  = @$ptrAOHDB;
971
972 ## prepare map of duplicates on FromAddress
973
974 my %dupsMap              = undef;
975 my $j                    = undef;
976
977 for $j (0 .. $#DB) {
978
979         $dupsMap{$j} = $DB[$j]{'FromAddress'}
980
981 }
982
983 my @mirrorDupsMap        = undef;
984 @mirrorDupsMap           = values(%dupsMap);
985 my $key                  = undef;
986 my $value                = undef;
987 my @arr                  = undef;
988 my $number               = undef;
989
990 foreach $key(keys %dupsMap) {
991
992         $value           = $dupsMap{$key};
993         next if($value !~ /\S+?/);
994
995         @arr             = undef;
996         @arr             = grep /$value/, @mirrorDupsMap;
997         $number          = scalar(@arr);
998
999         if($number > 1) {
1000
1001                 $eventType      = 'INFO'; $eventDesc = "DUPLICATE FromAddress ITEM DETECTED ON IMPORT & FLAGGED: ($number|$key|$value)"; &logEvent(\*FH_lo
    g, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
1002                 $dupsMap{$key}  = ('###'.$number.'### '.$dupsMap{$key});
1003
1004         ## print $dupsMap{$key}."\n";
1005
1006         }
1007         ## print "** key=".$key." *** value=".$dupsMap{$key}."___occurrences=".$number."\n";
1008 }
1009
1010 return %dupsMap
1011 }
1012
1013 #
1014 # ------------------------------------------------------------------
1015 #
1016
1017 sub checkMultiBuy_Extract {
1018
1019 my($thisLine,$thisMailingID,$pos,$ptrLAYOUT,$GDEBUG) = @_;
1020 my($exit) = 0;
1021
1022 my(%LAYOUT)                     = %$ptrLAYOUT;
1023 my(@rangeStack)                 = undef;
1024 my(@singleStack)                = undef;
1025 my($countRangeMatches)          = 0;
1026 my($repeat)                     = 1;
1027 my($match)                      = undef;
1028 my($replacementEscChar)         = '%';
1029 my($preProcRemoveChar)          = '^';
1030 my($elementSeparator)           = ' ';
```



WO 01/06435
PCT/US00/19403

```
1031
1032 ## PREPARE THE LINE FOR MATCHING
1033
1034 $thisLine                        = uc($thisLine);
1035
1036 ## RUN RULESET FROM RULES CF FILE
1037
1038 foreach(@GPreProcRules) { eval; }
1039
1040 my $thisPreExtractionLine        = $thisLine;
1041 my @testSingleStack              = undef;
1042 my $maxASCII                     = 0;
1043
1044 ## EXTRACTION LOOP
1045
1046 while($repeat) {
1047
1048 my $RULE = 0;
1049 my $match = undef;
1050
1051 ##print "\n\n--debug-- maxASCII = $maxASCII -- thisLine IS CURRENTLY |$thisLine| \n\n";
1052
1053         MATCH_CASE: {
1054
1055                 SINGLE_CASE: {
1056
1057 ##                      if($thisLine =~ /^([A-Z])$/)                                                    { $match = $1; $RULE = -1;  last MATCH_CASE; }
1058                         if($thisLine =~ /^([A-Z])[^A-Z\^\%\@\-]{1}/)                                    { $match = $1; $RULE = -2;  last MATCH_CASE; }
1059                         if($thisLine =~ /[^A-Z\^\%\@\-]([A-Z])[^A-Z\%\^\@\-]{1}[^A-Z\^\%\@\-]*/)        { $match = $1; $RULE = -3;  last MATCH_CASE; }
1060
1061                 }
1062
1063                 RANGE_CASE: {
1064
1065                         if($thisLine =~ /^([A-Z]\-[A-Z])[^A-Z\^\%\@]{1}/)                               { $match = $1; $RULE = 1; last MATCH_CASE; }
1066                         if($thisLine =~ /[^A-Z\%\^\@]{1}([A-Z]\-[A-Z])[^A-Z\^\%\@]{1}/)                 { $match = $1; $RULE = 2; last MATCH_CASE; }
1067                         ## if($thisLine =~ /([A-Z][A-Z][A-Z]*)[^A-Z\^\%]{1}/)                           { $match = $1; $RULE = 3; last MATCH_CASE; }
1068                         ## if($thisLine =~ /[^A-Z]{1}([A-Z][A-Z][A-Z]*)/)                               { $match = $1; $RULE = 4; last MATCH_CASE; }
1069                 }
1070
1071
1072
1073         $repeat = 0;
1074         }
1075
1076         $thisLine =~ s/$match/$replacementEscChar/g;
1077
1078         $thisCheckedMailingID = ($thisMailingID!=0) ? $thisMailingID : -1;
1079
1080                 ##print "\n- debug - ELEMENT CONSIDERED with break = $RULE |$match| \n";
1081                 if($GDEBUG) { print "--debug-- BEGIN RULES -- RANGE = |$LAYOUT{$thisCheckedMailingID}| from $thisCheckedMailingID \n"; }
1082
1083 ## BEGIN RULES TO SEE WHAT WE GOT ##
1084
1085         $PUSH = 1;
1086
1087         if($RULE > 0) {
1088
1089                 my(@arr) = undef;
1090                 my $tempMatch = $match;
1091                 $tempMatch =~ s/\-//g;
1092                 @arr = split(//,$tempMatch);
1093
1094                 if(!&alphaOrdered(@arr)) {
1095
1096                         ## print "-- debug -- REJECT - not alpha match |$match| in line |$thisPreExtractionLine| \n";
1097                         $PUSH = 0;
1098
1099                 }
```

```
1100
1101        }
1102
1103        #if($RULE > 0 && ord($arr[0]) <= $maxASCII) {
1104
1105        #       print "-- debug -- REJECT - range case |$match| out of alpha order with current stack!\n";
1106        #       if(ord($match)>$maxASCII) {$maxASCII = ord($match); }
1107        #       $PUSH = 0;
1108
1109        #}
1110
1111        if(defined($match) && $match !~ /[$LAYOUT{$thisCheckedMailingID}]/) {
1112
1113                ## print "--debug-- REJECT - not in RANGE = |$LAYOUT{$thisCheckedMailingID}| match |$match| in line |$thisPreExtractionLine|  \n" ;
1114                if(ord($match)>$maxASCII) {$maxASCII = ord($match); }
1115                $PUSH = 0;
1116
1117        }
1118
1119        if($PUSH && $RULE > 0 && $match =~ /\S+?/) {
1120
1121 ##             push(@rangeStack,  ('<'.$RULE.'> |'.$match)); $exit = 1;
1122                $match =~ s/\-/ thru /g;
1123                push(@rangeStack, $match);
1124                $exit=1;
1125        }
1126
1127        if($PUSH && $RULE < 0 && $match =~ /\S+?/) {
1128
1129                push(@testSingleStack,$match);
1130
1131                unless(ord($match) <= $maxASCII) {
1132
1133 ##                     push(@singleStack, ('<'.$RULE.'> |'.$match));
1134                       push(@singleStack,$match);
1135                       $exit=1;
1136
1137                }
1138                       if(ord($match)>$maxASCII) {$maxASCII = ord($match); }
1139        }
1140
1141                if($GDEBUG) { if(!defined($match)) {print "--debug-- match not defined! in line= |$thisPreExtractionLine|\n"; }}
1142 }
1143
1144 ## consolidate extractions, pre report
1145
1146 foreach(@rangeStack)    { unless($_ !~ /\S+?/) { push(@thisItemsSelected,$_); }}
1147 foreach(@singleStack)   { unless($_ !~ /\S+?/) { push(@thisItemsSelected,$_); }}
1148
1149 ## SPECIAL POST EXTRACTION CASE RULES
1150
1151        my $FIND_BUY_ALL = 0;
1152
1153        foreach(@GBuyAllIndicators) { s/[\n\r]//g; next if($_ !~ /\S+?/); if($thisPreExtractionLine =~ /$_/) { $FIND_BUY_ALL = 1; } }
1154
1155        if ($FIND_BUY_ALL) {
1156
1157                if($exit) {
1158
1159                        my $t = '.vfyTok';
1160                        $eventType = 'WRN_FUP'; ($eventRequiresFUP !~ /$t/) ? $eventRequiresFUP .= $t :  $eventRequiresFUP ; $FUPcount++; $excpCount++; $e
    ventDesc = " \<".$thisRecordID."\>   checkMultiBuy_Extract :: AMBIGUOUS ALL-ITEM SELECTION DETECTED IN EXTRACTION LOCATION <$pos>"; &logEvent(\*FH_log, $e
    ventType, $eventDesc, $Guser, $LGDEBUG_FTN);
1161
1162                }
1163
1164                push(@thisItemsSelected," ALL ($thisMailingID) "); $exit=1;
1165        }
1166
```



WO 01/06435
PCT/US00/19403

```
1167        ## DETECT DIFFERENCE IN EXTRACTION STACK AND MAX EXTRACTION STACK
1168
1169        if ($exit && (scalar(@singleStack) != scalar(@testSingleStack)) ) {
1170
1171                my $t = '.vfyTok';
1172                $eventType = 'WRN_FUP'; ($eventRequiresFUP !~ /$t/) ? $eventRequiresFUP .= $t:  $eventRequiresFUP ; $FUPcount++; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   checkMultiBuy_Extract :: AMBIGUOUS EXTRACTION WARNING / INSPECT IN EXTRACTION LOCATION <$pos>"; &logEvent(\*FH_log, $eventType
    , $eventDesc, $Guser, $LGDEBUG_FTN);
1173
1174        }
1175
1176        my $FIND_ADD_CHANGE = 0;
1177
1178        foreach(@GAddressChangeIndicators) { s/[\n\r]//g; next if($_ !~ /\S+?/); if($thisPreExtractionLine =~ /$_/) { $FIND_ADD_CHANGE = 1; } }
1179
1180        if ($FIND_ADD_CHANGE) {
1181
1182                my $t = '.chkAC';
1183                $eventType = 'WRN_FUP'; ($eventRequiresFUP !~ /$t/) ? $eventRequiresFUP .= $t :  $eventRequiresFUP ; $FUPcount++; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   checkMultiBuy_Extract :: POSSIBLE ADD/CHANGE REQUEST DETECTED IN EXTRACTION LOCATION <$pos>"; &logEvent(\*FH_log, $eventType,
    $eventDesc, $Guser, $LGDEBUG_FTN);
1184
1185        }
1186
1187        my $FIND_QUESTION = 0;
1188
1189        if($thisPreExtractionLine =~ /\?\s/) { $FIND_QUESTION = 1; }
1190
1191        if ($FIND_QUESTION) {
1192
1193                my $t = '.chkQst';
1194                $eventType = 'WRN_FUP'; ($eventRequiresFUP !~ /$t/) ? $eventRequiresFUP .= $t :  $eventRequiresFUP ; $FUPcount++; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   checkMultiBuy_Extract :: POSSIBLE ADD/CHANGE OR CARE REQUEST DETECTED IN EXTRACTION LOCATION <$pos>"; &logEvent(\*FH_log, $ev
    entType, $eventDesc, $Guser, $LGDEBUG_FTN);
1195
1196        }
1197
1198        my $FIND_AI_ONLY = 0;
1199
1200        if ($exit && scalar(@singleStack) == 2 && scalar(@testSingleStack) == 2) {
1201
1202        ## $x = scalar(@singleStack);
1203        ## $y = scalar(@testSingleStack);
1204
1205        ##print "-- debug -- AI TEST ___ singleStackLen = $x __ testSingleStackLen = $y \n";
1206
1207                if(grep /(A)|(I)/, @singleStack) { $FIND_AI_ONLY = 1;}
1208
1209        }
1210
1211        if ($FIND_AI_ONLY) {
1212
1213                my $t = '.vfyTok';
1214                $eventType = 'WRN_FUP'; ($eventRequiresFUP !~ /$t/) ? $eventRequiresFUP .= $t :  $eventRequiresFUP ; $FUPcount++; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   checkMultiBuy_Extract :: AMBIGUOUS EXTRACTION WARNING: \"A\" or \"I\" ONLY DETECTED"; &logEvent(\*FH_log, $eventType, $eventD
    esc, $Guser, $LGDEBUG_FTN);
1215
1216        }
1217
1218        my $LIKELY_PARSE_ERRORS = 0;
1219
1220        if ($exit && $thisPreExtractionLine =~ /[\[\]]+/) { $LIKELY_PARSE_ERRORS = 1; }
1221
1222        if ($LIKELY_PARSE_ERRORS) {
1223
1224                my $t = '.vfyTok';
1225                $eventType = 'WRN_FUP'; ($eventRequiresFUP !~ /$t/) ? $eventRequiresFUP .= $t :  $eventRequiresFUP ; $FUPcount++; $excpCount++; $eventDesc
    = " \<".$thisRecordID."\>   checkMultiBuy_Extract :: AMBIGUOUS EXTRACTION WARNING: BRACKETS FOUND IN EXTRACTION LOCATION <$pos>"; &logEvent(\*FH_log, $ev
    entType, $eventDesc, $Guser, $LGDEBUG_FTN);
```



WO 01/06435
PCT/US00/19403

```
1226
1227         }
1228
1229
1230         ##print "\n-$thisRecordID- debug singleStack -- \n";
1231         ##print @singleStack;
1232         ##print "\n-- debug testSingleStack -- \n";
1233         ##print @testSingleStack;
1234         ##print "\n-$thisRecordID--------------------------\n";
1235
1236
1237 return $exit;
1238 }
1239
1240 #
1241 # ---------------------------------------------------------------------
1242 #
1243
1244 sub detectBuyTokens {
1245
1246 my($MULTI_BUY_ON,$Gsubj_buyToken,$thisSubject,$thisMailingID,$thisBodyTop,$thisBodyBottom,$ptrHASHLAYOUT,$ptrSCALARtopLines,$ptrSCALARbottomLines,$GDEBUG)
     = @_;
1247
1248 my %LAYOUT               = %$ptrHASHLAYOUT;
1249 my @topLines             = @$ptrSCALARtopLines;
1250 my @bottomLines          = @$ptrSCALARbottomLines;
1251 my $buyTokenPosition     = 'none';
1252 $thisBuyStatus           = undef;
1253 @thisItemsSelected       = undef;
1254 $thisItemsSelectedStack = undef;
1255
1256 my $exit = 0;
1257
1258 ## print "--debug-- buyToken= |$Gsubj_buyToken|\n";
1259
1260 FIND_BUY_TOKENS: {
1261
1262 ##
1263 ## &checkMultiBuy_Extract returns success on a good match/extraction;
1264 ## @thisItemsSelected is created/populated at this time as well
1265 ##
1266
1267 ## check $thisSubject
1268
1269 ## print "\n\n==========debug-- SUBJECT = |$thisSubject| \n";
1270
1271         if(!$MULTI_BUY_ON && $thisSubject =~ /$Gsubj_buyToken/) {
1272
1273                 $buyTokenPosition = ' S '; $thisBuyStatus = ('<'.$buyTokenPosition.'> |'.$thisSubject.'|');
1274
1275 ## print "--debug-- thisBuyStatus= |$thisBuyStatus| \n";
1276
1277         last FIND_BUY_TOKENS;
1278         }
1279
1280         if($MULTI_BUY_ON) {
1281
1282                 if(&checkMultiBuy_Extract($thisSubject,$thisMailingID,' S ',\%LAYOUT,$GDEBUG)) {
1283
1284                         $buyTokenPosition = ' S '; $thisBuyStatus = '<'.$buyTokenPosition.'>';
1285
1286                 last FIND_BUY_TOKENS;
1287                 }
1288
1289         }
1290
1291 ## check @topLines
1292 ## print "\n\n==========debug-- thisBodyTop = |$thisBodyTop| \n";
1293
```



WO 01/06435
PCT/US00/19403

```
1294        if(!$MULTI_BUY_ON) {
1295
1296                foreach(@topLines) {
1297
1298                        $thisTopLine = $_;
1299
1300                        if($thisTopLine =~ /$Gsubj_buyToken/) {
1301
1302                                $buyTokenPosition = ' T ';
1303                                $thisBuyStatus = '<'.$buyTokenPosition.'> '.$thisTopLine;
1304
1305 ## print "--debug-- thisBuyStatus= |$thisBuyStatus| \n";
1306
1307                        }
1308
1309                }
1310
1311        last FIND_BUY_TOKENS;
1312        }
1313
1314
1315        if($MULTI_BUY_ON) {
1316
1317                if(&checkMultiBuy_Extract($thisBodyTop,$thisMailingID,' T ',\%LAYOUT,$GDEBUG)) {
1318
1319                        $exit =1;
1320
1321                        $buyTokenPosition = ' T ';
1322                        $thisBuyStatus = '<'.$buyTokenPosition.'> ';
1323
1324                last FIND_BUY_TOKENS;
1325                }
1326
1327        }
1328
1329
1330 ## check @bottomLines
1331
1332 ## print "\n\n==========debug-- thisBodyBottom = |$thisBodyBottom| \n";
1333
1334        if(!$MULTI_BUY_ON) {
1335
1336                foreach(@bottomLines) {
1337
1338                        $thisBottomLine = $_;
1339
1340                        if($thisBottomLine =~ /$Gsubj_buyToken/) {
1341
1342                                $buyTokenPosition = ' B ';
1343                                $thisBuyStatus = '<'.$buyTokenPosition.'> '.$thisBottomLine;
1344
1345 ## print "--debug-- thisBuyStatus= |$thisBuyStatus| \n";
1346
1347                        }
1348
1349                }
1350
1351        last FIND_BUY_TOKENS;
1352        }
1353
1354        if($MULTI_BUY_ON) {
1355
1356                if(&checkMultiBuy_Extract($thisBodyBottom,$thisMailingID,' B ',\%LAYOUT,$GDEBUG)) {
1357
1358                        $exit =1;
1359
1360                        $buyTokenPosition = ' B ';
1361                        $thisBuyStatus = '<'.$buyTokenPosition.'> ';
1362
```

```
1363                    last FIND_BUY_TOKENS;
1364                    }
1365
1366            }
1367
1368 }
1369
1370 ## print "--debug-- ==== $i ====== buyTokenPosition= |$buyTokenPosition|\n";
1371
1372 return $buyTokenPosition;
1373 }
1374
1375 #
1376 # ---------------------------------------------------------------------
1377 #
1378
1379 sub extractDedupItemsSelectedStack {
1380
1381 my(@thisItemsSelected) = @_;
1382
1383 my $thisItemsSelectedStack = undef;
1384 my $thisItemsSelectedStackSeparator = ',';
1385 my $i = undef;
1386
1387 for($i = 0; $i <= $#thisItemsSelected; $i++) {
1388
1389         my $item = $thisItemsSelected[$i]; # all items must be normalized!
1390
1391         next if($item !~ /\S+?/);
1392
1393         $item=&normalizeSpacing($item);
1394
1395         $thisItemsSelectedStack .= ($item.$thisItemsSelectedStackSeparator);
1396
1397 }
1398
1399 $thisItemsSelectedStack =~ s/\,\s*$//;
1400
1401 return  $thisItemsSelectedStack;
1402 }
1403
1404 #
1405 # ---------------------------------------------------------------------
1406 #
1407
1408 sub getDateStamp {
1409
1410 # get standardized date stamp (UNIX, WINNT)
1411 # returns a date stamp
1412
1413 my($Gplatform,$LGDEBUG_FTN) = @_;
1414
1415 if(!defined($Gplatform)) { $Gplatform = 'WIN'; }
1416 my $GTIME       = '';
1417 my $day         =  undef;
1418 my $val         =  undef;
1419
1420 if ($Gplatform ne 'WIN') { $val = `date '+%y%m%d%H%M%S-%a'`; }
1421         else {
1422                 $val = `date /t`;
1423                 chop($val);
1424                 $val =~ /(\w+)\s+(\d+)\/(\d+)\/(\d{2})(\d{2})/;
1425                 $val = $5.$2.$3; $day = $1;
1426         }
1427
1428 if ($Gplatform eq 'WIN') {
1429
1430                 $GTIME = `echo '' | time`;
1431                 $GTIME =~ /\:\s*(\d{1,2})\:(\d{2})\:(\d{2})\.(\d{2})/;
```

```
1432                    my $leadingDigit = $1;
1433                    if (length($leadingDigit) == 1) { $leadingDigit = ('0'.$leadingDigit); }
1434                    $val .= $leadingDigit.$2.$3.$4.'-'.$day;
1435            }
1436
1437 if($LGDEBUG_FTN) { print "DEBUG__gdate=".$val."\n"; }
1438
1439 return $val;
1440
1441 }
1442
1443 #
1444 # ------------------------------------------------------------------
1445 #
1446
1447 sub getFieldKeys {
1448
1449 my($ptrLayout) = @_;
1450 my(%LAYOUT) = %$ptrLayout;
1451
1452 ## prepare and count required fields from body data layout for check against body
1453
1454 my(@fieldKeys)  = undef;
1455 my($k)          = undef;
1456
1457 ##$f = scalar(@fieldKeys); print "--debug-- scalarStartFtn=$f \n";
1458
1459 foreach $k(sort keys %LAYOUT) {
1460
1461         next if($k !~ /^[a-z]{1,2}_/);  ## these elements are not fieldnames but are other CF parameters (name \t value)
1462
1463         ## print "--debug-- k= |$k|\n";
1464
1465         if($k =~ /\S+?/) { push(@fieldKeys,$k); }
1466 }
1467
1468 shift @fieldKeys;
1469 ## $f = scalar(@fieldKeys); print "--debug-- scalarEndFtn=$f \n";
1470
1471 return @fieldKeys;
1472 }
1473
1474 # ------------------------------------------------------------------------------------------
1475
1476 sub getKeyPos_Outfile {
1477
1478 my($ptrHASHrecordTemplate) = @_;
1479
1480 my(%HASHrecordTemplate) = %$ptrHASHrecordTemplate;
1481
1482 my @record                      = undef;
1483 $salutationFieldPos     = -1;
1484 $IDFieldPos             = -1;
1485 $LIDFieldPos            = -1;
1486 $MailingIDFieldPos      = -1;
1487 $firstNameFieldPos      = -1;
1488 $lastNameFieldPos       = -1;
1489 $IXFieldPos             = -1;
1490 $titleFieldPos          = -1;
1491 $stateFieldPos          = -1;
1492 $countryFieldPos        = -1;
1493 $postalCodeFieldPos     = -1;
1494 $emailFieldPos          = -1;
1495 $companyFieldPos        = -1;
1496 $addressFieldPos        = -1;
1497 $departmentFieldPos     = -1;
1498 $cityFieldPos           = -1;
1499 $fromAddressFieldPos    = -1;
1500
```



WO 01/06435
PCT/US00/19403

```
1501 my $i                    = 0;
1502
1503 @record = sort(keys(%HASHrecordTemplate));
1504
1505 ##print "---DEBUG---"; print @record; sleep 4;
1506
1507 for($i=0; $i <= $#record; $i++) {
1508
1509         $record[$i] = uc($record[$i]);
1510
1511         CASE: {
1512
1513                 if ($record[$i] =~ /FROM\_ADDRESS/)                                                 { $fromAddressFieldPos  = $i; last CASE; }
1514                 if ($record[$i] =~ /(EMAIL)|(E-MAIL)|(INTERNET_ADDR)|(INTERNET_AD)|(INTERNETAD)/)   { $emailFieldPos        = $i; last CASE; }
1515                 if ($record[$i] =~ /(COUNTRY)|(CTRY)/)                                              { $countryFieldPos      = $i; last CASE; }
1516                 if ($record[$i] =~ /(ZIP)|(POSTAL)/)                                                { $postalCodeFieldPos   = $i; last CASE; }
1517                 if ($record[$i] =~ /(INST)|(COMPANY)|(ORGANIZATION)/)                               { $companyFieldPos      = $i; last CASE; }
1518                 if ($record[$i] =~ /DEPARTMENT/)                                                    { $departmentFieldPos   = $i; last CASE; }
1519                 if ($record[$i] =~ /(ADDR)|(ADDRESS)/)                                              { $addressFieldPos      = $i; last CASE; }
1520                 if ($record[$i] =~ /CITY/)                                                          { $cityFieldPos         = $i; last CASE; }
1521                 if ($record[$i] =~ /(CUSTNO)/)                                                      { $IDFieldPos           = $i; last CASE; }
1522                 if ($record[$i] =~ /(LISTID)/)                                                      { $LIDFieldPos          = $i; last CASE; }
1523                 if ($record[$i] =~ /(PRIORITY)|(MAILING)/)                                          { $MailingIDFieldPos    = $i; last CASE; }
1524                 if ($record[$i] =~ /(.*F\w+NAME.*)|(FIRST)/)                                        { $firstNameFieldPos    = $i; last CASE; }
1525                 if ($record[$i] =~ /(.*L\w+NAME.*)|(LAST)/)                                         { $lastNameFieldPos     = $i; last CASE; }
1526                 if ($record[$i] =~ /^.*IX.*$/)                                                      { $IXFieldPos           = $i; last CASE; }
1527                 if ($record[$i] =~ /TITLE/)                                                         { $titleFieldPos        = $i; last CASE; }
1528                 if ($record[$i] =~ /STATE/ || $record[$i] =~ /^\_C$/)                               { $stateFieldPos        = $i; last CASE; }
1529         }
1530 }
1531
1532 if ($firstNameFieldPos  == -1)          { print STDOUT "[HEADER] WARNING: \/\\w\+F\\w\+NAME\/ was not found!\n"; }
1533 if ($lastNameFieldPos   == -1)          { print STDOUT "[HEADER] WARNING: \/\\w\+L\\w\+NAME\/ was not found!\n"; }
1534 if ($firstNameFieldPos  == -1)          { print STDOUT "[HEADER] WARNING: \/\\w\*IX\\w\*NAME\/ was not found!\n"; }
1535 if ($titleFieldPos      == -1)          { print STDOUT "[HEADER] WARNING: \/TITLE\/ was not found!\n"; }
1536 if ($stateFieldPos      == -1)          { print STDOUT "[HEADER] WARNING: \/STATE\/ was not found!\n"; }
1537 if ($postalCodeFieldPos == -1)          { print STDOUT "[HEADER] WARNING: \/ZIP|POSTAL\/ was not found!\n"; }
1538 if ($countryFieldPos    == -1)          { print STDOUT "[HEADER] WARNING: \/(COUNTRY)|(CTRY)\/ was not found!\n"; }
1539 if ($emailFieldPos      == -1)          { print STDOUT "[HEADER] WARNING: \/(EMAIL)|(E-MAIL)|(INTERNET_ADDR)|(INTERNET_AD)|(INTERNETAD)\/ was not found!\n
     "; }
1540
1541 }
1542
1543
1544 #
1545 # ------------------------------------------------------------------
1546 #
1547
1548 sub getNextDBkey_return {
1549
1550 my($keyFileName,$LGDEBUG_FTN) = @_;
1551
1552 $LOCK_SH = 1;
1553 $LOCK_EX = 2;
1554 $LOCK_NB = 4;
1555 $LOCK_UN = 8;
1556
1557 $POS_BOF = 0;
1558 $POS_CUR = 1;
1559 $POS_EOF = 2;
1560
1561 $/ = undef;
1562 $startKeys = 0;
1563
1564 if(! -s $keyFileName) { `echo $startKeys >> $keyFileName`; }
1565
1566 OPEN_DB: if (!open(KEYS, "+< $keyFileName")) {$exit = 0; $eventType = 'FAIL'; $eventDesc = "getNextDBkey_return::Cannot open: \[$keyFileName \]"; &logEven
     t(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);}
1567
```

```
1568 flock(KEYS, $LOCK_EX);
1569
1570         my($count)      = <KEYS>;
1571         $nextKey        = $count+1;
1572         seek(KEYS,0,$POS_BOF);
1573         print KEYS $nextKey;
1574
1575 flock(KEYS, $LOCK_UN);
1576 close(KEYS);
1577
1578 return $nextKey;
1579 }
1580
1581 #
1582 # ------------------------------------------------------------------------
1583 #
1584
1585 sub HASHloadFieldMap {
1586
1587 my($fileName,$LGDEBUG_FTN) = @_;
1588
1589 if (!open(FH, "$fileName")) { $eventType = 'FAIL'; $eventDesc = "HASHloadFieldMap::Cannot open: \[$keyFileName \]"; &logEvent(\*FH_log, $eventType, $event
     Desc, $Guser, $LGDEBUG_FTN);}
1590
1591 $/ = "\n";
1592
1593 my(@fieldMapTemp) = <FH>;
1594 my($key) = undef;
1595 my($value) = undef;
1596 my(%fieldMap) = undef;
1597
1598 close(FH);
1599
1600         foreach (@fieldMapTemp) {
1601
1602                 my $item = $_;
1603
1604                 next if(($item =~ /\/\//) || ($item !~ /\S+?/)); # comments
1605
1606                 ($key, $value) = split(/[\t\,]/,$item);
1607
1608                 $value =~ s/[\n\r]//g;
1609
1610                 $fieldMap{$key} = $value;
1611
1612         }
1613
1614 return %fieldMap;
1615 }
1616
1617 #
1618 # ------------------------------------------------------------------------
1619 #
1620
1621 sub loadFile_SCALAR {
1622
1623 my($fileName) = @_;
1624
1625 if (!open(FILE, "$fileName")) {$eventType = 'FAIL'; $eventDesc = "loadArray::Cannot open fileName: \[$fileName\]"; &logEvent(\*FH_log, $eventType, $eventD
     esc, $Guser, $LGDEBUG_FTN);}
1626
1627 $/ = "\n";
1628
1629 my(@all) = undef;
1630
1631 while(<FILE>) {
1632
1633         my $buf = $_;
1634         next if($buf !~ /\S+?/ || $buf =~ /^\/\//);
```



WO 01/06435
PCT/US00/19403

```
1635          push(@all, $buf);
1636
1637 }
1638
1639 return @all;
1640 }
1641
1642 #
1643 # ---------------------------------------------------------------------
1644 #
1645
1646 sub logEvent {
1647
1648 my($FH,$eventType,$eventDesc,$Guser,$LGDEBUG_FTN) = @_;
1649
1650 my $dateNow = &getDateStamp('WIN',$LGDEBUG_FTN);
1651 # print event to STDOUT
1652
1653 if($eventType eq 'ABORT') {
1654
1655          $foo = `mapisend -u administrator -p password -r aestes\@e-dialog.com -s "** $dateNow procOrder - Critical Error"  -m "$Guser $GclientName $eventT
     ype $eventDesc"`;
1656          die "Error! Cannot log! ".$eventType."\t".$eventDesc."\n" ;
1657 }
1658
1659 if($eventType !~ /_x_/) { print $eventType."\t".$eventDesc."\n"; }
1660
1661          else { $eventType =~ s/_x_//; }
1662
1663 # write event to activity log
1664
1665          &writeRecord(\*FH_log,$GfieldDelimiter,$thisLogKey=&getNextDBkey_return($GactivityLogKeysFileName,$LGDEBUG_FTN),\%GactivityLogRecord,'',$LGDEBUG_F
     TN);
1666          if($eventType eq 'FAIL') {
1667
1668                    $foo = `mapisend -u administrator -p password -r aestes\@e-dialog.com -s "** $dateNow procOrder - Critical Error"  -m "$Guser $GclientName
      $eventType $eventDesc"`;
1669                    exit;
1670
1671          }
1672 }
1673
1674 #
1675 # ---------------------------------------------------------------------
1676 #
1677
1678 sub normalizeSpacing {
1679
1680 my($dirty) = @_;
1681
1682 $dirty =~ s/\s{2,}/$space/g; $dirty =~ s/\s+$//; $dirty =~ s/^\s+//;
1683 $clean = $dirty;
1684
1685 return $clean
1686 }
1687
1688 #
1689 # ---------------------------------------------------------------------
1690 #
1691
1692 sub queryUPDATE_DB {
1693
1694 my($ptrLAYOUT,$thisQueryKey, $thisQueryFieldName, $fieldName, $fieldValue, $fieldName1, $fieldValue1, $RECORD_RECOVERED, $LGDEBUG_FTN) = @_;
1695
1696 ##print "** DSN = $LAYOUT{'thisMailingDSN'} \n";
1697
1698 my(%LAYOUT) = %$ptrLAYOUT;
1699 my $RS = undef;
1700 my $Conn = undef;
```



WO 01/06435
PCT/US00/19403

```
1701 my $Errors = undef;
1702 my @fieldNames = undef;
1703 my $PID = -1;
1704 my $recCount = 0;
1705 my $EXIT = 1;
1706
1707 # construct/open DSN
1708
1709 my $Conn = undef;
1710
1711 $Conn = new Win32::OLE("ADODB.Connection");
1712 $Conn->Open($LAYOUT{'thisMailingDSN'},"","");
1713
1714 my(%DB) = undef;
1715
1716 # Load data into recordset
1717
1718         my $mailingTable = $LAYOUT{'thisMailingTable'};
1719         my %foo = undef;
1720
1721 # look to see if update record exists, $thisQueryKey
1722
1723         unless($RECORD_RECOVERED) {
1724
1725                 my $RECORD_EXISTS = 1;
1726                 %foo = &querySELECT_DB(\%LAYOUT,$thisQueryFieldName,$thisQueryKey,$LGDEBUG_FTN);
1727                 if($foo{'_exit_'} < 1) { $RECORD_EXISTS = 0; $EXIT = 0; return $EXIT; }
1728         }
1729
1730         $thisQuery = "UPDATE $mailingTable SET $fieldName = \'$fieldValue\', $fieldName1 = \'$fieldValue1\'  WHERE $thisQueryFieldName = \'$thisQueryKey\'
     ";
1731
1732         $RS = $Conn->Execute($thisQuery);
1733
1734 ##%foo = %$RS;
1735 ##foreach(keys(%foo)) { print "---key = $_ __ value = $foo{$_} \n"; }
1736
1737         if(!$RS) {
1738
1739                 $Errors = $Conn->Errors();
1740                 print "Errors:\n";
1741                 foreach $error (keys %$Errors) {
1742                         print $error->{Description}, "\n";
1743                 }
1744                 $eventType = 'WRN_FUP'; $eventRequiresFUP .= (($eventRequiresFUP =~ /badMDB/)?'':'.badMDB'); $eventDesc = " \<".$thisRecordID."\>   ($LAYO
     UT{'thisMailingDSN'}) queryUPDATE_DB :: Cannot create RS: \[$thisQuery\]"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
1745
1746         $EXIT = 0;
1747         return $EXIT;
1748         }
1749
1750         $eventType = 'INFO'; $eventDesc = " \<".$thisRecordID."\>   ($LAYOUT{'thisMailingDSN'}) queryUPDATE_DB :: UPDATE SUCCESSFUL: \[$thisQuery\]"; &log
     Event(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
1751
1752 return $EXIT;
1753 }
1754
1755 #
1756 # ---------------------------------------------------------------------
1757 #
1758
1759 sub querySELECT_DB {
1760
1761 my($ptrLAYOUT,$thisQueryFieldName,$thisQueryKey,$LGDEBUG_FTN) = @_;
1762
1763 ##print "** DSN = $LAYOUT{'thisMailingDSN'} \n";
1764
1765 my(%LAYOUT) = %$ptrLAYOUT;
1766 my $RS = undef;
```



WO 01/06435
PCT/US00/19403

```
1767 my $Conn = undef;
1768 my $Errors = undef;
1769 my @fieldNames = undef;
1770 my $PID = -1;
1771 my $recCount = 0;
1772
1773 # construct/open DSN
1774
1775 my $Conn = undef;
1776
1777 $Conn = new Win32::OLE("ADODB.Connection");
1778 $Conn->Open($LAYOUT{'thisMailingDSN'},"","");
1779
1780 my(%DB) = undef;
1781 $DB{'_exit_'} = 1;
1782
1783 # Load data into recordset
1784
1785 my $mailingTable = $LAYOUT{'thisMailingTable'};
1786
1787 $thisQuery = "SELECT * FROM $mailingTable WHERE $thisQueryFieldName = \'$thisQueryKey\'";
1788
1789 $RS = $Conn->Execute($thisQuery);
1790
1791 if(!$RS) {
1792
1793         $Errors = $Conn->Errors();
1794         print "Errors:\n";
1795         foreach $error (keys %$Errors) {
1796                 print $error->{Description}, "\n";
1797         }
1798         $eventType = 'FAIL'; $eventDesc = " \<".$thisRecordID."\>   ($LAYOUT{'thisMailingDSN'}) querySELECT_DB :: Cannot create RS: \[$thisQuery\]"; &logE
    vent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
1799 }
1800
1801 my $i = undef;
1802
1803 for($i=0; $i < $RS->Fields->Count; $i++) { $fieldNames[$i] = $RS->Fields->Item($i)->Name; }
1804
1805 my $RESULT_FLAG = 1;
1806
1807 if($RS->EOF) { $RESULT_FLAG = 0; }
1808 $RS -> MoveNext;
1809
1810 if(!$RS->EOF) { $RESULT_FLAG = -1; }
1811 $RS -> MovePrevious;
1812
1813 if($RESULT_FLAG < 1) {
1814
1815         (($eventRequiresFUP =~ /badMDB/)?'':'.badMDB'); $FUPcount++; $eventType = 'ERR_FUP'; $eventDesc = " \<".$thisRecordID."\>   ($LAYOUT{'thisMailingD
    SN'}) querySELECT_DB :: Bad Lookup ($RESULT_FLAG): \[$thisQuery\]"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_FTN);
1816
1817         $DB{'_exit_'} = $RESULT_FLAG;
1818
1819 return %DB;
1820 }
1821
1822 while ( !$RS->EOF ) {
1823
1824         for($i=0; $i < $RS ->Fields->Count; $i++) {
1825
1826                 $DB{$fieldNames[$i]}= uc($RS->Fields->Item($i)->value);
1827         }
1828
1829         $RS->MoveNext; $recCount++;
1830 }
1831
1832 $Conn->Close;
1833
```

```
1834 return %DB;
1835 }
1836
1837 #
1838 # ------------------------------------------------------------------
1839 #
1840
1841 sub read_DSNtoAOH {
1842
1843 my($DSN,$LGDEBUG_FTN) = @_;
1844
1845 ##print "** DSN = $DSN \n";
1846
1847 $RS = undef;
1848 $Conn = undef;
1849 $Errors = undef;
1850 @fieldNames = undef;
1851 $PID = -1;
1852 $recCount = 0;
1853
1854 # construct/open DSN
1855
1856 $Conn = new Win32::OLE("ADODB.Connection");
1857 $Conn->Open($DSN,"","");
1858 my(@FILE) = undef;
1859
1860 # Load data into recordset
1861
1862 $thisQuery = "SELECT * FROM Email";
1863
1864 $RS = $Conn->Execute($thisQuery);
1865
1866 if(!$RS) {
1867         $Errors = $Conn->Errors();
1868         print "Errors:\n";
1869         foreach $error (keys %$Errors) {
1870                 print $error->{Description}, "\n";
1871         }
1872         $eventType = 'FAIL'; $eventDesc = "read_DSNToAOH::Cannot create RS: \[$thisQuery\]"; &logEvent(\*FH_log, $eventType, $eventDesc, $Guser, $LGDEBUG_
     FTN);
1873 }
1874
1875 my $i = undef;
1876
1877 for($i=0; $i < $RS->Fields->Count; $i++) { $fieldNames[$i] = $RS->Fields->Item($i)->Name; }
1878
1879 while ( !$RS->EOF ) {
1880
1881         for($i=0; $i < $RS ->Fields->Count; $i++) {
1882
1883          $FILE[$recCount]{$fieldNames[$i]}= $RS->Fields->Item($i)->value;
1884
1885         }
1886
1887         $RS->MoveNext; $recCount++; if ($recCount % 20 == 0) { print STDOUT "+"; }
1888 }
1889
1890 $Conn->Close;
1891
1892 return @FILE;
1893 }
1894
1895 #
1896 # ------------------------------------------------------------------
1897 #
1898
1899 sub removeTabs {
1900
1901 my($tabs) = @_;
```

```
1902
1903 $tabs = s/\t//g;
1904
1905 return $tableless
1906
1907 }
1908
1909 #
1910 # --------------------------------------------------------------------
1911 #
1912
1913 sub subjectSynonymnLookup {
1914
1915 my($subject,$ptrHASHLAYOUT) = @_;
1916 my(%LAYOUT) = %$ptrHASHLAYOUT;
1917 my($thisMailingID) = -1;
1918
1919         $subject =~ /\s*([\=\*\+\-]{1,3})\s*/;
1920         $thisSubjectMailingIDToken = $1;
1921
1922         if(defined($LAYOUT{$thisSubjectMailingIDToken})) { $thisMailingID = $LAYOUT{$thisSubjectMailingIDToken}; }
1923
1924         ## print "-- debug -- ATTEMPT MAILING ID RECOVERY... TOKEN= |$thisSubjectMailingIDToken|... RESULT MAILINGID= |$thisMailingID|\n";
1925
1926 return $thisMailingID
1927 }
1928
1929 #
1930 # --------------------------------------------------------------------
1931 #
1932
1933 sub writeRecord {
1934
1935 # takes FH by ref; has _e_ feature for values
1936
1937 my($FH,$GfieldDelimiter,$logKey,$ptrHASHrecord,$RECORD_TYPE, $LGDEBUG_FTN) = @_;
1938
1939 flock($FH, $LOCK_EX);
1940
1941 my $fileEmpty = 0;
1942 if(-z $FH) {$fileEmpty = 1;}
1943
1944 %HASHrecord = %$ptrHASHrecord;
1945
1946 $space = " ";
1947 $exit = 1;
1948
1949 $LOCK_SH = 1;
1950 $LOCK_EX = 2;
1951 $LOCK_NB = 4;
1952 $LOCK_UN = 8;
1953
1954 my $record = undef;
1955 my $header = undef;
1956 my $key = undef;
1957
1958 foreach $key(sort(keys(%HASHrecord))) {
1959
1960         $value  = $HASHrecord{$key};
1961
1962         if($fileEmpty) { $key =~ s/[a-z]{1,2}_//; $header .= (uc($key).$GfieldDelimiter); }
1963
1964         if($value =~ /^_e_(.{2,})$/) { $value = eval($1); }
1965
1966
1967         $record .= ($value.$GfieldDelimiter);
1968
1969 }
1970 chop($record);                                  # remove last field delimiter
```



WO 01/06435
PCT/US00/19403

```
1971
1972 if($fileEmpty) { chop($header); print $FH $header."\n"; }
1973 if($ADD_CHANGE_ON && $RECORD_TYPE ne 'BODY') { $record = &canonicalize($record); }
1974 print $FH $record."\n";
1975
1976 flock($FH, $LOCK_UN);
1977 }
1978
1979 __END__
1980
```

## Claims

1. A machine-based method comprising

analyzing an e-mail message to derive response information concerning a commercial transaction, and based on the derived information, and

automatically generating commercial transaction data in a format that is usable to automatically complete the commercial transaction.

2. The method of claim 1 in which the commercial transaction comprises an order for a product or service.

3. The method of claim 1 in which the e-mail message comprises at least part of an e-mail sent to a customer and responses of the customer to the e-mail.

4. The method of claim 1 in which the automatic completion of the commercial transaction comprises order fulfillment.

5. A machine-based method comprising

sending an e-mail message to a customer offering a product or service for sale, the e-mail message comprising locations for response by the customer indicating his intention to order the product or service,

receiving from the customer an e-mail message that includes the response,

based on the received e-mail, automatically generating order information in a format usable automatically by an order fulfillment system to cause the order to be filled.

6. A machine-based method comprising

analyzing an e-mail message to derive response information concerning a commercial transaction,

automatically identifying response information which requires resolution of an issue with the source of the e-mail message, and

automatically managing an e-mail dialog with the source to resolve the issue.

7. The method of claim 6 in which at least some of the e-mail dialog is performed automatically.

8. Software guided interactive e-mail dialogs to resolve, on behalf of a vendor, customer issues that occur in direct response e-mails that are automatically identified as requiring a dialog.

9. A machine-based method comprising

automatically sorting e-mail messages, based on response information contained in the messages, into e-mail messages that can be processed automatically to generate commercial transactions, e-mail messages in which the response information is inadequate to permit generation of commercial transactions, and e-mail messages that may be subjected to exception handling to yield information that is sufficient to generate commercial transactions.

10. A machine-based method comprising

analyzing an e-mail message to derive response information concerning a commercial transaction, and

automatically generating a confirmatory e-mail message to the source of the e-mail message confirming that the commercial transaction has been or will be completed.

11. A machine-based method comprising

receiving inbound e-mail messages that result from corresponding outbound e-mail messages associated with a marketing program, the inbound messages containing response information, each of the outbound messages being associated with a distinct piece of the marketing program, and

automatically associating the response information in each of the inbound messages with the corresponding distinct piece of the marketing program.

12. The method of claim 11 in which the piece comprises a marketing campaign or a marketing flight.

13. The method of claim 11 in which the inbound messages contain information that links them to the corresponding outbound messages, and the associating step uses the link information.

14. The method of claim 13 further comprising automatically parsing the inbound messages for order information.

15. A machine-based method comprising

sending outbound e-mail messages associated with commercial transactions,

storing information related to each of the outbound messages in a database, the information being useful for completing the commercial transactions, the information not being contained in the outbound messages,

analyzing inbound e-mail messages that result from the outbound messages and that contain response information useful in completing the commercial transactions, and

automatically merging the response information with corresponding information in the database for use in completing the transactions.

16. A machine-based method comprising

sending outbound e-mail messages associated with commercial transactions,

storing information related to each of the outbound messages in a database, the information being useful for completing the commercial transactions, the information not being contained in the outbound messages,

analyzing inbound e-mail messages that result from the outbound messages and that contain response information useful in completing the commercial transactions,

identifying inbound e-mail messages that cannot be processed automatically to generate the commercial transactions, and

using the database information to assist in exception handling of the identified inbound messages.

WILLIAM HERP 10

FROM: HARVARD BUSINESS SCHOOL PUBLISHING
SENT: WEDNESDAY, DECEMBER 16, 1998 9:19 PM
TO: WILLIAM HERP
SUBJECT: = NEW INSIGHTS FROM HARVARD BUSINESS REVIEW

HARVARD BUSINESS SCHOOL PUBLISHING CORPORATION
BOSTON, MASSACHUSETTS USA

THURSDAY, DECEMBER 17, 1998

DEAR WILLIAM HERP,

ON THURSDAY, DECEMBER 3RD, WE WROTE YOU REGARDING A SPECIAL OFFER ON THE HARVARD BUSINESS REVIEW PAPERBACK SERIES. SINCE WE HAVE NOT HEARD BACK, WE WANTED TO FOLLOW UP BEFORE THIS SPECIAL OFFER CLOSES. IF YOU ARE SIMPLY NOT INTERESTED, WE APOLOGIZE FOR THE INTRUSION. BELOW PLEASE FIND THE ORIGINAL OFFER IN ITS ENTIRETY.

THE HARVARD BUSINESS REVIEW PAPERBACK SERIES BRINGS YOU THE LATEST AND MOST SIGNIFICANT THINKING ON TODAY'S MOST PRESSING MANAGEMENT CHALLENGES. THESE INSIGHTFUL COLLECTIONS ARE THE DEFINITIVE RESOURCE FOR PROFESSIONALS.

EACH TITLE:
+ PROVIDES A BROAD UNDERSTANDING OF AN ISSUE
+ IS CLEARLY WRITTEN AND, IN MANY CASES, DRAWS UPON REAL COMPANY EXAMPLES
+ HELPS YOU CONSTRUCT A USEFUL CONCEPTUAL FRAMEWORK FOR DECISION-MAKING AND IMPLEMENTATION
+ CONTAINS EIGHT ARTICLES FROM HARVARD BUSINESS REVIEW

<> EACH PAPERBACK IS $19.95 PLUS SHIPPING AND HANDLING <>

12

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TO ORDER ONE OR MORE OF THESE PAPERBACKS, SIMPLY REPLY TO THIS MESSAGE AND NOTE THE LETTER (A-F) OF THE HARVARD BUSINESS REVIEW PAPERBACK YOU WOULD LIKE TO RECEIVE. PLEASE TYPE THE LETTERS IN THE 1ST LINE OF THE BODY OF YOUR REPLY E-MAIL. SHIPPING AND HANDLING CHARGES WILL BE APPLIED TO EACH ORDER.

YOUR CHOICES (DETAILED BELOW) ARE:

A: HARVARD BUSINESS REVIEW ON CHANGE PAPERBACK
B: HARVARD BUSINESS REVIEW ON KNOWLEDGE MANAGEMENT PAPERBACK
C: HARVARD BUSINESS REVIEW ON STRATEGIES FOR GROWTH PAPERBACK
D: HARVARD BUSINESS REVIEW ON MEASURING CORPORATE PERFORMANCE PAPERBACK
E: HARVARD BUSINESS REVIEW ON LEADERSHIP PAPERBACK

F: THE EXECUTIVE COLLECTION - ALL FIVE TITLES FOR $89

OR IF YOU PREFER, CALL 1-800-668-6780 (617-496-1449 OUTSIDE THE U.S.)
MON. - FRI. 8 A.M. - 6 P.M. EST. PLEASE BE SURE TO MENTION PRIORITY CODE 3202.

14

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FIG. 1A

A: ** HARVARD BUSINESS REVIEW ON CHANGE **
PROVIDES LANDMARK IDEAS TO HELP YOU UNDERSTAND THE BEST WAYS FOR YOUR ORGANIZATION TO MANAGE CHANGE. INCLUDES ARTICLES BY JOHN KOTTER AND MORE.
(240 PP/#8842/$19.95)

B. ** HARVARD BUSINESS REVIEW ON KNOWLEDGE MANAGEMENT **
HIGHLIGHTS THE LEADING-EDGE THINKING AND PRACTICAL APPLICATIONS ON HOW COMPANIES GENERATE, COMMUNICATE, AND LEVERAGE KNOWLEDGE ASSETS. INCLUDES ARTICLES BY PETER DRUCKER, JOHN SEELY BROWN, AND MORE.
(240 PP/#8818/$19.95)

C: ** HARVARD BUSINESS REVIEW ON STRATEGIES FOR GROWTH **
PRESENTS THE LATEST TACTICS FOR HELPING MANAGERS FIND AND EXPLOIT THE BEST OPPORTUNITIES FOR GROWTH AND PROFITABILITY. INCLUDES ARTICLES BY ARIE DE GEUS, JEFFREY RAYPORT, AND MORE.
(240 PP/#8850/$19.95)

D: ** HARVARD BUSINESS REVIEW ON MEASURING CORPORATE PERFORMANCE **
OFFERS INSIGHT ON WHAT YOU NEED TO MEASURE AND HOW PERFORMANCE MEASURES CAN ALIGN AN ORGANIZATION AND BOOST PRODUCTIVITY. INCLUDES ARTICLES BY PETER DRUCKER, ROBERT KAPLAN AND DAVID NORTON, AND MORE.
(240 PP/#8826/$19.95)

E: ** HARVARD BUSINESS REVIEW ON LEADERSHIP **
PRESENTS PROVEN FUNDAMENTALS OF LEADERSHIP AND CHALLENGES MANY LONG-HELD ASSUMPTIONS ABOUT THE TRUE SOURCES OF POWER AND AUTHORITY. INCLUDES ARTICLES BY JOHN KOTTER, JOSEPH BADARACCO, JR., AND MORE.
(240 PP/#8834/$19.95)

F: PURCHASE THE EXECUTIVE COLLECTION (INCLUDES ALL FIVE TITLES) FOR JUST $89- A SAVINGS OF MORE THAN 10%. (PRODUCT #7419BN)

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FIG. 1B

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<

<>EACH PAPERBACK IS $19.95 PLUS SHIPPING AND HANDLING <>

IMPORTANT NOTE FOR OUR CUSTOMERS OUTSIDE THE U.S.: PURCHASERS ARE RESPONSIBLE FOR ALL DUTIES, TAXES, BROKERAGE FEES, AND/OR IMPORT FEES IMPOSED BY THE COUNTRY OF IMPORT. SHIPPING AND HANDLING CHARGES WILL BE APPLIED TO YOUR ORDER. DELIVERY TO CANADA: $14.00 FOR THE FIRST TITLE, $2.00 FOR EACH ADDITIONAL TITLE. INTERNATIONAL DELIVERY OUTSIDE NORTH AMERICA: $20.00 FOR THE FIRST TITLE, $5.00 FOR EACH ADDITIONAL TITLE.

PLEASE ALSO REVIEW AND UPDATE THE ADDRESS INFORMATION BELOW SO THAT WE CAN PROCESS YOUR REQUEST PROMPTLY.

| | |
|---|---|
| FIRST NAME: | [WILLIAM] |
| LAST NAME: | [HERP] |
| TITLE: | [PRESIDENT] |
| COMPANY: | [E-CARE GROUP INC.] |
| DEPARTMENT: | [] |
| ADDRESS1: | [1646 MASSACHUSETTS AVE.] |
| ADDRESS2: | [] |
| ADDRESS3: | [] |
| CITY: | [LEXINGTON] |
| PROVINCE/STATE: | [MA] |
| POSTAL/ZIP CODE: | [2173] |
| COUNTRY: | [] |
| PHONE: | [ ] |
| FAX: | [ ] |
| EMAIL: | [WHERP@E-CARE.COM] |

16

[[891270||3202|]]

FIG. 1C

WILLIAM HERP

FROM: HARVARD BUSINESS SCHOOL PUBLISHING
SENT: MONDAY, FEBRUARY 08, 1999 8:25 PM
TO: WILLIAM HERP
SUBJECT: ** A FREE NO-OBLIGATION TRIAL FROM HARVARD BUSINESS REVIEW

FROM THE DESK OF LAURA WINIG
HARVARD BUSINESS SCHOOL PUBLISHING CORPORATION
BOSTON, MASSACHUSETTS

MONDAY, FEBRUARY 8, 1999

=----------=

~INTRODUCING~

*BENCHMARKING* A NEW THREE-PART VIDEO SERIES FROM HARVARD BUSINESS SCHOOL PUBLISHING CORPORATION

TO TAKE *BENCHMARKING* FOR A NO-OBLIGATION 14-DAY TEST DRIVE, SIMPLY REPLY TO THIS E-MAIL WITH THE WORD "YES" IN THE SUBJECT LINE

=----------=

DEAR WILLIAM HERP:

INTERESTED IN UNEARTHING NEW IDEAS AND UNCONVENTIONAL SOLUTIONS FOR THE CHALLENGES FACING YOUR COMPANY? HERE AT THE PUBLISHING ARM OF HARVARD BUSINESS SCHOOL, WE'VE CREATED AN EXCITING NEW PROGRAM THAT CAN SHOW YOU HOW SOME LEADING COMPANIES USE BENCHMARKING -- STUDYING AND EMULATING TOP PERFORMERS INSIDE, AND OUTSIDE, THEIR INDUSTRIES -- TO ELIMINATE LONG-STANDING PROBLEMS AND BECOME TOP PERFORMERS.

DISCOVER HOW NEW PRACTICES CAN BE APPLIED TO YOUR ORGANIZATION -- WITH IMPRESSIVE AND MEASURABLE RESULTS -- IN BENCHMARKING, AN INNOVATIVE THREE-PART VIDEO SERIES. WE'LL TAKE YOU DEEP INSIDE PROFILED COMPANIES SUCH AS MOBIL OIL, GTE, AND SUNHEALTH TO LEARN HOW THEY IDENTIFIED "BEST OF CLASS" COMPANIES TO BENCHMARK IN ORDER TO IMPROVE THEIR OWN PERFORMANCE.

YOU'LL SEE HOW BENCHMARKING CAN GIVE YOUR TEAM A COMMON RALLYING POINT AND MOTIVATE COORDINATED ACTION. YOU'LL LEARN HOW TO IDENTIFY PROCESSES TO BENCHMARK, HOW TO FIND THE RIGHT PARTNER, AND HOW TO INITIATE THE FIRST STEPS (EVEN ON A LIMITED BUDGET). YOU'LL FIND OUT HOW TO IDENTIFY NOVEL OPPORTUNITIES, HOW TO STRUCTURE YOUR EFFORTS FOR SUCCESS, EVEN PROPER BENCHMARKING ETIQUETTE. EACH CONCEPT IS CLEARLY EXPLAINED AND ILLUSTRATED TO FACILITATE IMPLEMENTATION.

BENCHMARKING FOR CONTINUOUS IMPROVEMENT, BENCHMARKING CORE PROCESSES, AND BENCHMARKING OUTSIDE THE BOX BRING YOU FIRSTHAND COMMENTARY FROM SENIOR EXECUTIVES, INDUSTRY EXPERTS, AND FRONT-LINE PERSONNEL IN A FAST-PACED DOCUMENTARY STYLE THAT GENERATES INTEREST, UNDERSTANDING, AND ENTHUSIASM FOR THESE IMPORTANT IDEAS. THESE VIDEOS WILL STIMULATE DISCUSSION AND PROVIDE GUIDELINES TO HELP YOU DEVELOP AN ACTION PLAN FOR YOUR ORGANIZATION.

MAY I SEND YOU BENCHMARKING FOR A FREE, NO-OBLIGATION TRIAL? SIMPLY REPLY TO THIS E-MAIL WITH THE WORD "YES" IN THE SUBJECT LINE AND WE'LL SEND YOU THE PROGRAM TO TRY WITH OUR COMPLIMENTS. WE'LL SEND YOU THIS INNOVATIVE SERIES RIGHT AWAY. AFTER 14 DAYS, WE WILL MAIL YOU AN INVOICE FOR $1190 (A SAVINGS OF $595 VERSUS THE INDIVIDUAL VIDEO PRICE OF $595 EACH).

IF YOU ARE NOT COMPLETELY SATISFIED WITH BENCHMARKING SIMPLY RETURN IT TO US. YOU WILL OWE NOTHING. WHY WAIT TO LEARN HOW SUCCESSFUL CHANGE MANAGEMENT CAN DRAMATICALLY ENHANCE YOUR ORGANIZATION'S PERFORMANCE?

SINCERELY,
LAURA WINIG

FIG. 2A

DIRECTOR

P.S. IF YOU PREFER, PRINT OUT THIS INVITATION, INITIAL IT AT THE TOP, (PLEASE VERIFY YOUR SHIPPING ADDRESS IS CORRECT AS LISTED ABOVE -- WE MUST HAVE A STREET ADDRESS FOR SHIPMENT) AND FAX IT TO 617-496-1029, OR SIMPLY CALL 1-800-668-6780. PLEASE BE SURE TO MENTION PRIORITY CODE 3275.

CONTACT INFORMATION

BELOW PLEASE FIND THE CONTACT INFORMATION WE CURRENTLY HAVE ON FILE. IF THIS INFORMATION IS NOT CORRECT, PLEASE MAKE YOUR EDITS BETWEEN THE APPROPRIATE BRACKETS AND RETURN - VERBATIM - AS PART OF YOUR REPLY E-MAIL. PLEASE INDICATE ANY ADDRESS CHANGE BY INCLUDING THE WORDS 'ADDRESS CHANGE" AT THE TOP OF YOUR ORDER-REPLY.

IF YOU WISH TO UNSUBSCRIBE FROM SPECIAL OFFER MAILINGS, PLEASE REPLY TO THIS E-MAIL MESSAGE WITH THE WORD "UNSUB" AT THE TOP OF YOUR REPLY.

__BILLING ADDRESS__

| | |
|---|---|
| BILL FIRST NAME: | [WILLIAM ] |
| BILL LAST NAME: | [HERP ] |
| BILL TITLE: | [PRESIDENT ] |
| BILL COMPANY: | [E-CARE GROUP INC. ] |
| BILL DEPARTMENT: | [ ] |
| BILL ADDRESS1: | [1646 MASSACHUSETTS AVE. ] |
| BILL ADDRESS2: | [ ] |
| BILL ADDRESS3: | [ ] |
| BILL CITY: | [LEXINGTON ] |
| BILL PROVINCE/STATE: | [MA ] |
| BILL POSTAL/ZIP CODE: | [02173 ] |
| BILL COUNTRY: | [ ] |
| BILL PHONE: | [ ] |
| BILL FAX: | [ ] |
| BILL EMAIL: | [WHERP@E-CARE.COM ] |

__SHIPPING ADDRESS (IF DIFFERENT)__

| | |
|---|---|
| SHIP FIRST NAME: | [ ] |
| SHIP LAST NAME: | [ ] |
| SHIP TITLE: | [ ] |
| SHIP COMPANY: | [ ] |
| SHIP DEPARTMENT: | [ ] |
| SHIP ADDRESS1: | [ ] |
| SHIP ADDRESS2: | [ ] |
| SHIP ADDRESS3: | [ ] |
| SHIP CITY: | [ ] |
| SHIP PROVINCE/STATE: | [ ] |
| SHIP POSTAL/ZIP CODE: | [ ] |
| SHIP COUNTRY: | [ ] |
| SHIP PHONE: | [ ] |
| SHIP FAX: | [ ] |
| SHIP EMAIL: | [ ] |

18

74

[[891270|3275|]] 66

68 70 72

FIG. 2B

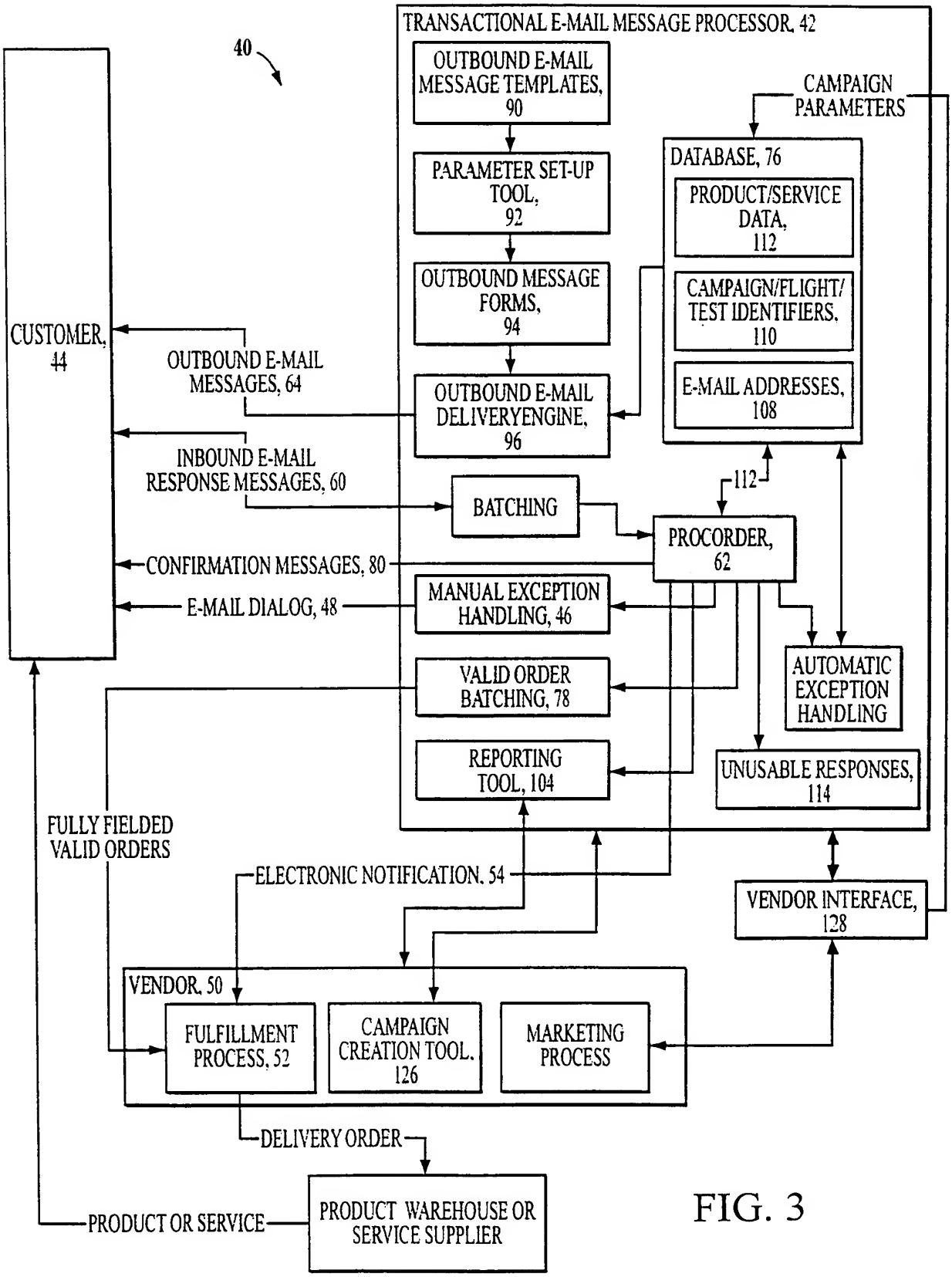
TRANSACTIONAL E-MAIL MESSAGE PROCESSOR, 42
40
OUTBOUND E-MAIL MESSAGE TEMPLATES, 90
CAMPAIGN PARAMETERS
PARAMETER SET-UP TOOL, 92
DATABASE, 76
PRODUCT/SERVICE DATA, 112
OUTBOUND MESSAGE FORMS, 94
CAMPAIGN/FLIGHT/ TEST IDENTIFIERS, 110
CUSTOMER, 44
OUTBOUND E-MAIL MESSAGES, 64
E-MAIL ADDRESSES, 108
OUTBOUND E-MAIL DELIVERYENGINE, 96
INBOUND E-MAIL RESPONSE MESSAGES, 60
112
BATCHING
PROCORDER, 62
CONFIRMATION MESSAGES, 80
MANUAL EXCEPTION HANDLING, 46
E-MAIL DIALOG, 48
AUTOMATIC EXCEPTION HANDLING
VALID ORDER BATCHING, 78
REPORTING TOOL, 104
UNUSABLE RESPONSES, 114
FULLY FIELDED VALID ORDERS
ELECTRONIC NOTIFICATION, 54
VENDOR INTERFACE, 128
VENDOR, 50
FULFILLMENT PROCESS, 52
CAMPAIGN CREATION TOOL, 126
MARKETING PROCESS
DELIVERY ORDER
PRODUCT OR SERVICE
PRODUCT WAREHOUSE OR SERVICE SUPPLIER

FIG. 3

# INTERNATIONAL SEARCH REPORT

Inte .ional application No.
PCT/US00/19403

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) :G06F 17/60
US CL : 705/1

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/1,709/206,207,379/193,707/505

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

DIALOG, WEST,EAST

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category* | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|---|---|---|
| X | US 5,724,424 A (GIFFORD) 03 Mar 1998, Fig 1[68,64,66,67,62,200]; col 4 lines 48-53; col 5 lines 22-29; Fig.3[5,6,7]; col 5 lines 18-19;col 5 lines 34-37;Fig 5[18]; Fig 4[15]; col 5 lines 49-57; Fig 6[19-25];col 5 lines 29-44;Fig 4[8-17];Fig 2[1-3];Fig 3[3];col 5 line 25-col 6 line 5];Fig. 5;col 6 lines 20-29;col 6 lines 39-42;Fig.3[3] | 1-16 |

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

| | | | |
|---|---|---|---|
| * | Special categories of cited documents: | "T" | later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention |
| "A" | document defining the general state of the art which is not considered to be of particular relevance | "X" | document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone |
| "E" | earlier document published on or after the international filing date | "Y" | document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art |
| "L" | document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) | "&" | document member of the same patent family |
| "O" | document referring to an oral disclosure, use, exhibition or other means | | |
| "P" | document published prior to the international filing date but later than the priority date claimed | | |

| | |
|---|---|
| Date of the actual completion of the international search<br>19 AUGUST 2000 | Date of mailing of the international search report<br>02 OCT 2000 |
| Name and mailing address of the ISA/US<br>Commissioner of Patents and Trademarks<br>Box PCT<br>Washington, D.C. 20231<br>Facsimile No. (703) 305-3230 | Authorized officer<br>Tod Swann<br>Telephone No. (703) 305-[illegible] |

Form PCT/ISA/210 (second sheet) (July 1998)★